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ABSTRACT

This multiple case study examined the phenomenon of gifted student underachievement, using creative productivity (Type III enrichment in Renzulli's Enrichment Triad Model) as a systematic intervention for reversing the underachievement pattern. Twelve teachers selected 17 underachieving students (ages 8 to 13) as subjects. The study first identified a variety of factors contributing to underachievement of high ability students, including emotional issues, social and behavioral problems, the lack of an appropriate curriculum, and learning and self-regulation difficulties. The study's major finding was that almost all the students made gains in achievement, attitude, or behavior during the year of or the year following the intervention. Students were differentially affected by such aspects as the relationship with the teacher and the learning of self-regulation strategies. Several teacher behaviors emerged as crucial to student success, including: (1) taking time to get to know the student; (2) focusing on positive traits of the student; (3) understanding their role as facilitator; (4) applying the role of teacher as researcher; and (5) conveying a belief in the students' abilities. Appended are a sample management plan and a sample page from a student product. (Contains 70 references.) (DB)

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THE NATIONAL RESEARCH CENTER ON THE GIFTED AND TALENTED

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The Prism Metaphor: A New Paradigm for Reversing Underachievement

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ABSTRACT

The purpose of this multiple case study was threefold. The first objective was to examine the phenomenon of underachievement using creative productivity, specifically Type III enrichment, (Renzulli, 1977) as a systematic intervention for reversing the pattern. Type III enrichment provides opportunities for students to become actual investigators of real problems in areas of interest through suitable means of inquiry and to bring their findings to bear on real world audiences. The next goal was to describe and analyze the effects of the intervention on participating students, and last, to develop grounded theory about the dynamics of reversing the underachievement pattern. Twelve teachers who had received training in the *Enrichment Triad Model* (Renzulli, 1977) selected 17 students identified as gifted who were underachieving in their academic classroom settings. The 17 students ranged in age from 8-13 and included five girls and 12 boys. All students were guided through a Type III study by their referring teacher. Interviews with students and teachers, teachers' observational logs, student products, and documents provided information about individual students in the context of pursuing Type III investigations.

The findings were numerous. First, a variety of factors were identified as contributing to the underachievement pattern of high ability students including: emotional issues; social and behavioral problems; the lack of an appropriate curriculum; and learning and self-regulation difficulties. These contributing factors resulted in the students' demonstrating unique learning needs. The second and most compelling finding of the research was the positive gains made by the students through their involvement in the Type III intervention. Almost all of the students made positive gains during the course of the year or in the year following the intervention in achievement, attitude, or behavior. Most were no longer underachieving in their school settings at the end of the intervention. Five aspects of the problem evolved as an important focus for different groups of students depending on their unique learning needs: 1) the relationship with the teacher, 2) the presentation of self regulation strategies, 3) the opportunity to investigate their own issues of underachievement, 4) the opportunity to work in an area of interest in their preferred style of learning, and 5) the opportunity to interact with an appropriate peer group.

Several teacher behaviors emerged as crucial to the students' success in reversing the underachievement pattern. These behaviors included: 1) taking time to get to know the student, 2) focusing on positive traits of the student, 3) understanding their role as facilitator, 4) applying the role of teacher as researcher, and 5) conveying a belief in the students' abilities.

These results formed the foundation for the development of grounded theory in understanding the dynamics of reversing underachievement in high ability students. In addition, the findings endorsed the use of a positive approach to help students reverse their pattern of underachievement.

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EXECUTIVE SUMMARY

Introduction

Nothing may be as frustrating to educators and parents as a bright, young mind that seems to be wasted. In fact, concern with the problem of underachievement, especially among potentially high-achieving students, has increased substantially in recent years (Reid, 1991). Professionals have agreed for decades that the phenomenon of underachievement is complex, baffling, and challenging (Passow & Goldberg, 1958; Rimm, 1986; Whitmore, 1980). Although considerable research has been conducted on underachievement among students with high academic potential, we still know precious little about it. Gallagher (1985) argues that the research on underachievement generally lacks substantive studies. Further, many of the findings that have been reported are contradictory and leave practitioners confused and ill-equipped to deal effectively with the problem. Professionals cannot agree on specific characteristics of students who are underachieving or the factors contributing to the problem. Evidence of effective intervention strategies is especially inconsistent and inconclusive.

In essence, what schools need is a better understanding of the complexity of the problem and knowledge of strategies educators can use that are likely to succeed for the greatest number of underachievers regardless of contributing factors. The few studies that have examined various curricular approaches that are effective with underachieving students with high academic potential (Baum, 1988; Fehrenbach, 1993; Karnes, McCoy, Zerbach, Wollensheim, & Clarizio, 1962; Tannenbaum & Baldwin, 1983; Whitmore, 1980) have several important points in common. Unlike the remedial approaches which usually are offered to underachievers, the successful approaches tend to be child-centered, accentuate student strengths and value student interests. These approaches stress the process of learning as well as the final product. Learning is seen as an active process in which students choose to learn instead of passively taking notes and completing tests. Likewise research on high ability students in general has indicated that the highest levels of student productivity often occur when students are engaged in self-selected investigations. In other words, allowing students to pursue topics of strong and sometimes even passionate interest often results in high levels of achievement.

Much has been learned about procedures for applying this type of learning experience to bright youngsters and providing them with the guidance necessary for carrying out advanced-level projects. This technology has been incorporated into a major dimension of the *Enrichment Triad Model* (Renzulli, 1977; Renzulli & Reis, 1985) entitled "Type III enrichment." The *Enrichment Triad Model* was designed to transform students from lesson learners and consumers of knowledge to producers of new knowledge. To help students become creative producers, the model offers three categories of experiences. The first are general exploratory activities (Type I enrichment) designed to expose students to new and exciting ideas not covered in the regular curriculum. The second category of enrichment (Type II) consists of group training activities in specific skills and processes.

The final and most advanced type of enrichment is Type III. The goal of Type III enrichment is to provide opportunities for students to become actual investigators of real problems through suitable means of inquiry and to bring their findings to bear on real-world audiences. In Type III enrichment, students become producers of creative products through the collection of raw data, advanced-level problem solving techniques, and the application of research strategies or artistic procedures that are used by first-hand investigators within various fields of study.

Methods

It was our belief that engaging underachieving students with high academic potential in creative productivity or Type III enrichment would have a positive impact on reversing their pattern of underachievement despite the unique issues surrounding each student. We were also convinced that systematically studying the students in a naturalistic setting over time as they engaged in the active pursuit of a self-selected problem would provide us with new insights about the complexity of the problem and the idiosyncratic dynamics accompanying each case. These observations would also afford us the opportunity to identify environmental, psychological, and cognitive factors contributing to or impeding the achievement of the targeted students. With new knowledge and understanding about the manifestation of underachievement, educators would be able to plan effective strategies for reversing this pattern among high-ability students. Hopefully, the insights gained from the study would form the basis for a new paradigm for addressing the problem of underachievement among high ability students.

The specific research questions guiding the study were:

1. What factors contribute to underachievement?
2. How does pursuing a Type III investigation affect particular underachievement patterns?
3. Are there specific strategies that enhance the probability of positive gains resulting from the Type III process?

Who are Gifted Underachievers?

Generally, gifted underachievers are viewed as students who demonstrate high ability on a measure of intelligence but fail to perform in school at a level commensurate with their potential. However, there are major differences in how this definition is interpreted or operationalized (Butler-Por, 1987; Emerick, 1988).

With limited consensus about what constitutes underachievement, consistent findings among research studies are almost impossible to obtain unless they are based on similar definitions and parameters. Equally problematic is that the acceptance of a particular definition limits the generalizability of the findings to a particular group of underachievers.

In this study, to ensure external validity and generalizability, the definition of gifted underachievement was intentionally broad and left to be interpreted within the context of the individual participating districts. A student was defined as an underachiever if the school could document concrete evidence of **both** high potential **and** concomitant underachievement. Evidence for high potential included one or more of the following: students' eligibility for the individual district's gifted program; high scores on an intelligence test, test of specific aptitude, or achievement test; teacher observations of high ability in certain areas, at certain times, under certain circumstances; a previous record of high achievement or grades; or sample products showing students' expertise or in-depth interest in particular areas. Documentation of underachievement included evidence such as a discrepancy between performance and potential; grades below expectation based on ability; occurrence of behavior problems in regular classroom hindering student achievement; minimal effort shown by student; student attitude displaying indifference and lack of motivation even if achieving adequately; or reports from psychologists, special educators, counselors, or classroom teachers confirming underachievement.

Summary of Research Design

To address the questions raised by this study, a qualitative multi-case study approach was used. This approach is deemed powerful in developing and testing theory when methods based on sampling logic are difficult or impossible to use and when the focus is holistic, i.e., intended to examine the complex dynamics of a system that causes the phenomenon within a context (Lincoln & Guba, 1985; Moon, 1991).

The teacher played a vital role in both implementing the study and collecting relevant data. While facilitating the Type III process with the students, the participating teachers observed and collected data which enabled them to understand the student, to identify relevant issues, and to develop strategies to help students succeed. According to Moon (1991), the teacher is a natural researcher who holds great promise in bridging the gap between research and practice.

Eleven teachers of the gifted from throughout the United States and one teacher from Singapore volunteered to participate in this study. All teachers had training in the *Enrichment Triad Model* ranging from entry level (attending at least one Confratute, an annual institute in gifted education at the University of Connecticut where the *Enrichment Triad Model* is taught) to advanced experiences (Master's degree in gifted education from the University of Connecticut or the College of New Rochelle where the model is emphasized).

Student Sample

Seventeen underachieving students with high academic potential from 12 districts throughout the United States and Singapore were selected to participate in the study. Five girls and 12 boys ranging in age from 8 to 12 worked intensively with participating teachers who guided them through a Type III investigation. All the students demonstrated superior ability on either an intelligence or achievement measure (range 85th %ile to 99th %ile).

The Intervention

The study was carried out during at least one academic year and in three cases for two years. It proceeded through four phases. Phase I involved identifying underachieving students with high academic potential by documenting evidence of high intellectual potential and average or below average achievement. In Phase II, a high degree of familiarity with the students' academic record and personal life was obtained through the use of interest surveys, student essays on their feelings about school, and informal interviews between the teacher and the student in a risk-free, non-threatening environment.

During Phase III, teachers worked closely with the students on their Type III investigations. The steps included focusing the problem to be investigated, setting up a management plan with the students, providing necessary resources and strategies for students, and helping students share the completed investigation with interested audiences. During the process, the teachers sent monthly reports and logs to the research team at the University of Connecticut and telephoned whenever they wished to share an experience or needed to obtain suggestions for interacting with particular students.

Phase IV consisted of in-depth interviews by the researchers with the teachers about their reactions to the treatment, the effect the treatment had on the students, and the teachers' general perception about the overall experience.

Data Collection

In this multiple case study approach, qualitative data were collected throughout the course of the study. The researchers attempted to gain an accurate view of individual cases by converging on the problem of underachievement from a variety of perspectives (Moon, 1991). Observations and reflections by the teachers recorded in extensive logs during the course of the intervention, group interviews with the teachers, audiotapes of student interviews with their teachers, direct student interviews, student essays, interest surveys, student products, and document review provided information about individual students.

Data Analysis

The data analysis used the constant comparative inductive method (Glaser & Strauss, 1967, p. 105). This method proceeded in four stages: 1) comparing incidents applicable to each category, 2) integrating categories and their properties, 3) delimiting the theory, and 4) writing the theory. Within case analysis preceded cross-case comparisons. Two members of the research team reviewed data and checked each other's conclusions and coding. Where differences occurred they invited the third member of the university team to render a decision.

Results

Sample Case Study

The following vignette is a sample of one student who represented some of the issues characterizing the student sample. His story depicts how the intervention proceeded and what effects it had on this student.

Jamison

Jamison believed he was related to Abraham Lincoln. He had been told for years that the sixteenth President of the United States was part of his family's lineage, but his relatives had never provided him with the information he needed to trace his family history. He wrote to his grandparents numerous times but received no response. Finally, he called them and, to his delight, learned that an older cousin had once traced the history and discovered information which supported Jamison's belief about his family's heritage. Months passed, but the older cousin did not respond to Jamison's request to send the coveted historical information. This situation frustrated the young genealogist, yet this lack of attention from a family member was nothing new to this young man.

Jamison, a fourth grader, came from a dysfunctional family stricken with divorce, alcohol problems, and accusations of child abuse. His teacher claimed he was neglected at home saying, "He never has a haircut, nor does he comb his hair or brush his teeth. He is frequently alone and has been seen riding his bicycle all over town with no adult supervision." Even his mother claimed "that school is his escape from our rocky home life. . . . His older brother, a high school dropout, is currently in trouble with the law." Jamison was described by his teacher as "constantly in motion." Diagnosed as hyperactive, he was prescribed Ritalin three times daily. Jamison had no positive role models in his family, and his time after school was totally unsupervised. One afternoon, this ten-year-old boy was caught going door to door in the community collecting money for a local baseball team and then taking the money and spending it on himself.

Jamison's social worker described him as a very bright young boy. When tested for involvement in the enrichment program, Jamison scored in the superior range on an individual intelligence test. His classroom teachers recognized his abilities and commented positively about his potential each year on his report card. They noted leadership skills, boredom with routine tasks, easy mastery of facts, keen observation, curiosity, a good sense of humor, divergent thinking skills, attention to detail, and non-conformity. Though Jamison's potential was apparent, his grades had steadily declined, and teachers were exasperated. His classroom teacher from the previous year said, "Last year, he filled in all the dots on his ITBS test."

Jamison connected with the enrichment teacher in his school. As his involvement in enrichment activities increased, his general school performance began to make steady improvements. He became more and more attached to his enrichment teacher, who was facilitating his research in family genealogy. He would gladly do extra work for her and behave in the regular classroom in order to spend time with her. His grades began to improve and his classroom teacher no longer found him to be a problem in the classroom. He even began calling her "Mom" on occasion.

The enrichment teacher assisted Jamison in pursuing his quest for information. She suggested he write a letter to the state archivist requesting information. After a year and a half, he succeeded in obtaining conclusive information which confirmed his belief. He then completed his family tree, a family map, and a narrated slide show entitled "Jamison and Abe: 9th Cousins" which he presented to numerous audiences for which he received media coverage from three area newspapers.

Cross-Case Findings

During the course of the intervention as typified in the story of Jamison, the teachers learned about the home, school, and motivation patterns of individual students while working with the students on their Type III investigations. Although specific details were often idiosyncratic to individual students, qualitative analysis of information gleaned from logs, student interviews, and products across cases led to the emergence of specific patterns of underachievement. These patterns suggested tentative answers to the three research questions posed earlier. The conclusions and supportive documentation drawn from the data for each question are described below.

Factors Contributing to Underachievement

The first research question explored possible factors and combinations of factors contributing to each student's pattern of underachievement. It became increasingly evident that four factors contributed to the underachievement of students in the sample: emotional issues, social and behavioral concerns, inappropriate curriculum, and learning disabilities/poor self-regulation concerns. Although the students may display behaviors in more than one factor, a primary factor and several supporting factors generally emerged for each student.

Emotional Issues

Emotional issues were a primary factor for six of the students. This factor included dysfunctional families, the students' extraordinary need for attention, perfectionism, and depression. For example, Jamison, the fourth grade student described in the vignette, came from a dysfunctional family stricken with divorce, alcohol problems, and accusations of child abuse.

Perfectionism and depression also explained some students' underachievement. Anne, a fourth grader, complained of migraine headaches in school. "I worry a lot, especially about writing and taking state tests. My mother says I should get all "As." She never lets me do my projects on my own." Her mother claimed that her daughter "is acutely aware that with very little effort she could accomplish what others struggle to achieve. I need to keep prompting her or she will never work hard."

Social and Behavioral Concerns

These concerns contributed to underachievement in eight of the students in the sample. The specific concerns included in this category were the influence of an inappropriate peer group, questioning of social values, and lack of behavioral controls and social skills. Mara, a seventh grader dressed, acted, and underachieved to impress a peer group she desired.

Edward, a freshman in high school previously described also was part of a dysfunctional family. He admitted that he got into trouble in school because he had an image to uphold in front of his peers. He attempted to hide his interest in learning when his friends were present.

Inappropriate Curriculum

Nine of the students were simply not motivated by the regular curriculum. Some believed there was no challenge offered in the curriculum while others preferred different styles of learning. Bryan, an eighth grader, saw his participation in the study as a way to be excused from social studies, a course he disliked. He argued that if he could test out of the class he would write a new court case for the eighth grade court drama. Many of the students in their essays on their views of school believed there should be more time made for projects.

Learning Disabilities and Poor Self-Regulation

The final contributor to underachievement and the factor that appeared most often as either a primary or secondary contributor was the presence or suspicion of a learning disability or poor student self-regulation—"command and application of appropriate learning strategies" (Baum, Owen, & Dixon, 1991). Typical complaints by the teachers of many of the students included disorganization, failure to complete assignments, forgetfulness, and lack of time management skills or attending skills. Consider the description rendered by Mitch's enrichment teacher, "Everyone wants to teach him until they get him. He drives them crazy. He cannot focus his attention on anything. He's the proverbial space cadet. He's very bright and very disorganized. . . ."

Effect of Intervention on Manifestation of Underachievement in Individual Students

The second research question examined the effects of the Type III process on individual students. Fifteen out of the 17 students completed their Type III investigations and made positive gains during the course of the year or in the year following the Type III intervention. (No gains were reported for the students who did not complete their projects.) These changes were documented by report cards (grades and teacher comments), achievement test scores, teacher and parent informal interviews with enrichment teachers, student interviews, and a group interview with the enrichment teachers. Improvement was noted in achievement, effort and attitude regarding school, self-regulated behavior, and classroom behavior.

For different groups of students, different features of the Type III process were most compelling. For instance, if a student tended to underachieve to gain attention from an adult, the relationship with the teacher-mentor was the most important feature of the intervention process. On the other hand, if the student was bored with her regular curriculum the opportunity to work on a self-selected project stimulated her achievement. Five features embedded in the Type III process evolved as a major focus of the intervention for different groups of students, and these are described below.

Relationship With Teacher

In the cases where students had a need for positive attention from an adult due to the lack of support in the home environment, relationships with teachers became the most important aspect of the Type III process. One example was the case of Jamison who developed a strong bond with his teacher during the course of the project. As described earlier, he even began calling her Mom on occasion.

Learning Strategies or Compensation Techniques

For the students who seemed to have poor learning or organizational skills, completing a Type III helped them become aware of strategies which facilitate learning. While the students were pursuing their Type III investigations, teachers discovered learning obstacles such as poor time management, a student's inability to keep track of his/her belongings, and poor concentration. When these problems surfaced, the teacher would suggest strategies, or the students would invent their own ways of solving the problem.

Opportunities for Investigations

Sometimes the students seemed to use the Type III process to investigate an area relating to their underachievement. Zaleha was questioning the extensive drive to achieve she witnessed in her peers in Singapore, while she herself frowned upon such pressure. To understand both points of view she designed a "choose your own adventure book" in which she characterized the plight of the overachiever and underachiever and was able to resolve her conflict.

Working in an Area of Interest

For many participants in this study, the Type III investigation provided an opportunity to choose a topic of interest and create new knowledge in a preferred style of learning. Many of the students were interested in science and technology and seemed to prefer hands-on learning and completing projects.

Interacting With Appropriate Peer group

The final focus of the Type III process was that, for some students, it provided access to a peer group that was more involved in advanced academic activities. Acceptance by students who valued achievement was powerful in reversing the pattern of underachievement in several of the students. When Mara, who had been associating with an undesirable peer group, began the Type III process, she became more involved with the students in the gifted program who were working on environmental issues.

Strategies That Promote Success

The third research question focused on teacher strategies that influenced the degree to which positive change occurred in the students. The students who made the largest gains in reversing their underachievement worked with teachers who took time to get to know the student before initiating the Type III; who focused on students' positive qualities; who saw their roles as facilitators not teachers; and understood the Type III process. These teachers applied their role as researcher to understand and serve the students. Most important, perhaps, was their belief in the students' abilities and their willingness to convey this belief to the students.

Conclusion and Discussion: The Prism Metaphor for Reversing Underachievement

The results of the study provide insight into the multiple causes of underachievement; the dynamic and idiosyncratic effects of the Type III intervention process on students; and specific teacher behaviors that have a positive impact on student motivation, self-efficacy, and achievement.

These results also suggest a new metaphor for addressing the complex dynamics of revering underachievement, the prism metaphor. Past efforts to reverse the underachievement problem used the wrong type of lens to focus the problem. Typically telescopic in nature, this approach targeted traditional steps to achievement—study hard, do your homework, get good grades, and please your teachers.

Rather than a telescopic approach, this model uses a prism to redirect the focus. Just as a prism takes in nondescript light and transforms it into colors, so does the Type III investigation unleash the hidden potential of underachieving students with high academic ability. The Type III experience accomplishes this by capitalizing on the potential for positive interaction among student abilities, interests, learning styles, and supportive student-teacher relationships.

Underachievement is based on the interrelationship of a variety of contributing factors. These factors, based on existing literature and confirmed by this study are: emotional issues, social and behavioral problems, inappropriate curriculum, and learning deficits. What is interesting is that the precipitating factors for some of the underachieving students in this study were not apparent until the student was well into the intervention process and only came to light as a result of the close student/teacher interaction. These factors result in individual student needs which must be satisfied before the pattern of underachievement can be reversed.

In this metaphor, the majority of the time, energy, and resources of teachers are allocated to enabling the underachieving student to experience success and overcome personal obstacles to achievement. In effect, the Type III process satisfies individual student needs resulting in one or more of the following: positive relationships with adults, acquisition of self-regulation strategies, an understanding of personal issues of underachievement, an interest-based curriculum, and the influence of a positive peer group. These factors, then, precede and are critical to improved student achievement.

While it would be inappropriate to assume a cause and effect relationship, desirable behaviors not ordinarily displayed by these students emerged as a direct result of participation in the Type III process. Based on these data, the Type III intervention appears to offer a practical educational strategy that meets the various needs of underachieving students with high academic potential across individual etiologies.

The prism metaphor was selected to help explain the transformation that takes place when underachievers turn-around because of the complex blending of effects that occur within the context of a Type III experience. Whereas real images are formed when rays of light are reflected in a mirror, something quite different happens when a ray of light is passed through a prism. Not only does it change direction, which was the goal of reversing the underachievement of students in this study, but it also takes on qualitative differences that result in a spectrum of color that is critically different from the light energy that originally entered this special environment. Scientists understand and can explain what happens within a prism only to a certain extent. There is also a "mysterious phenomenon" that happens within the special prism environment that is readily observable (the dispersion of white light into a spectrum of color), and a similar phenomenon was observed as the students pursued Type III experiences. We can only speculate about the combination of ingredients that caused a turn-around within the Type III environment, but we believe that the unique and somewhat mysterious effects that take place within the prism environment are a good metaphor for the changes observed in participating students. Because of the uniqueness of each student, and the equally unique interaction between teacher and student, a certain part of the explanation for these reversals may remain somewhat of a mystery. Other than the overall and admittedly flexible circumstances that surround each individual Type III experience, a prescription or formula cannot be written that is appropriate for all underachieving students. However, we believe that the prism metaphor provides enough information to create the early stages of grounded theory about the dynamics of underachievement and specific procedures and guidelines for reversing the patterns of underachievement in students with high abilities and potentials.

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Table of Contents

ABSTRACT vii

EXECUTIVE SUMMARY ix

Introduction 1

Methods 3
- Purpose of the Study 5
- Who Are Gifted Underachievers? 5
- Summary of Research Design 7
- Teacher as Researcher 7
- Participating Teachers 7
- Student Sample 8
- The Intervention 8

Data Collection 11

Data Analysis 11

Results 12
- Sample Case Studies 12
  - Jamison 12
  - Mara 13
  - Mark 14
  - Bryan 15
  - Zaleha 16

Cross-Case Findings 16

Factors Contributing to Underachievement 17
- Emotional Issues 17
- Social and Behavioral Concerns 19
- Inappropriate Curriculum 19
- Learning Disabilities and Poor Self-Regulation 20

Effect of Intervention on Manifestation of Underachievement in Individual Students 21
- Relationship With Teacher 25
- Learning Strategies or Compensation Techniques 25
- Opportunities for Investigations 26
- Working in an Area of Interest 26
- Interacting With Appropriate Peer Group 27

Strategies That Promote Success 27
- Knowing the Students 27
- Focusing on Students' Positive Qualities 28
- Viewing Their Roles as Facilitators 28
- Understanding the Type III Process 29
- Applying Their Role as Researchers 29
- Believing in the Student's Ability 30

Table of Contents (continued)

Relation of Findings to the Literature on Underachievement 30

Factors Contributing to the Problem of Underachievement 31
    Emotional Issues 31
    Social and Behavioral Factors 31
    Inappropriate Curriculum 31
    Poor Strategies or Learning Disabilities 32

Effect of the Type III Intervention 32

Effective Teacher Strategies 33

Conclusion and Discussion: The Prism Metaphor for Reversing Underachievement 34

References 37

Appendices 43
    Appendix A: Sample Management Plan 43
    Appendix B: Sample Page From Student Product 47

List of Tables

Table 1. Overview of Student Sample 9

Table 2. Contributors to Underachievement for Individual Students 18

Table 3. Student Needs, Type III Projects, Focus of Intervention, and Results 22

List of Figures

Figure 1. Type III process 4

Figure 2. Whitmore's checklist to identify gifted underachievers 6

Figure 3. The prism metaphor for reversing underachievement 35

The Prism Metaphor: A New Paradigm for Reversing Underachievement

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> Treat people as if they were
> what they ought to be and
> you help them become
> What they are capable of being.
> Goethe

Introduction

Nothing may be as frustrating to educators and parents as a bright, young mind that seems to be wasted. In fact, concern with the problem of underachievement, especially among potentially high-achieving students, has increased substantially in recent years (Reid, 1991). Professionals have agreed for decades that the phenomenon of underachievement is complex, baffling, and challenging (Passow & Goldberg, 1958; Rimm, 1986; Whitmore, 1980). Although considerable research has been conducted on underachievement among students with high academic potential, we still know precious little about it. Gallagher (1985) argues that the research on underachievement generally lacks substantive studies. Further, many of the findings that have been reported are contradictory and leave practitioners confused and ill-equipped to deal effectively with the problem. Professionals cannot agree on specific characteristics of students who are underachieving or the factors contributing to the problem. Evidence of effective intervention strategies is especially inconsistent and inconclusive.

Two major approaches underlie attempts at intervention—counseling and education. While some evidence supports positive gains using family counseling (Colangelo, 1984; Rimm, 1986), psychological interventions often depend upon a long-term commitment by the family, the availability of appropriate psychological services, and the assumption that the primary causes of underachievement lie within the student and/or the home. The role of educators in contributing to both the causes and possible solutions to the problem is often ignored in the counseling approach. Likewise, educational intervention strategies to date have not enjoyed widespread success in reversing underachievement (Emerick, 1992).

Several explanations have been offered for lack of widespread success in reversing the underachievement pattern. For instance, Passow and Goldberg (1958) argued that one common intervention is unrealistic because no one common cause for underachievement exists. Interventions should then be individually designed to address the unique situation of the underachiever. Another claim is that appropriate strategies will remain elusive until a holistic knowledge of the underachievement syndrome emerges (Lowenstein, 1977).

Complementing these concerns is the hypothesis that the most typically-used approaches focus on the negative behaviors of these students. Some of these efforts include enrolling underachieving students in study skills courses (Crittenden, Kaplan, & Helm, 1984; Hastings, 1982; Scruggs & Cohn, 1983), providing full-time special classes (Butler-Por, 1987; Whitmore, 1980;) or using behavior management techniques (Rimm, 1986). The "learn-how-to-get-organized-and-you-will-achieve" or "work-hard-and-you-will-be-rewarded" philosophy implies that underachieving students consciously want to improve and are willing to work hard and become self-disciplined in order to reverse their pattern of underachievement. According to Kaufman (1991), this is not usually the case. She defines these learners as discouraged and argues that they need encouragement, not discipline, or more time on task to overcome their failure mode.

In essence, what schools need is a better understanding of the complexity of the problem and knowledge of strategies educators can use that are likely to succeed for the greatest number of underachievers regardless of contributing factors. The few studies that have examined various curricular approaches that are effective with underachieving students with high academic potential (Baum, 1988; Fehrenbach, 1993; Karnes, McCoy, Zerbach, Wollensheim, & Clarizio, 1962; Tannenbaum & Baldwin, 1983; Whitmore, 1980) have several important points in common. Unlike the remedial approaches mentioned above, the successful approaches tend to be child-centered, accentuate student strengths, and value student interests. These approaches stress the process of learning as well as the final product. Learning is seen as an active process in which students choose to learn instead of passively taking notes and completing tests. Several of these studies report that when underachieving students complete a meaningful project, positive gains in self-esteem, academic self-efficacy, and overall motivation have been noted (Baum, Emerick, Herman, & Dixon, 1989; Baum & Owen, 1988; Emerick, 1992; Whitmore, 1980). Likewise, research on high ability students in general has indicated that the highest levels of student productivity often occur when students are engaged in self-selected investigations. In other words, allowing students to pursue topics of strong and sometimes even passionate interest often results in high levels of achievement.

Much has been learned about procedures for applying this type of learning experience to bright youngsters and providing them with the guidance necessary for carrying out advanced-level projects. This technology has been incorporated into a major dimension of the *Enrichment Triad Model* (Renzulli, 1977; Renzulli & Reis, 1985) entitled "Type III enrichment." The *Enrichment Triad Model* was designed to transform students from lesson learners and consumers of knowledge to producers of new knowledge. To help students become creative producers, the model offers three categories of experiences. The first are general exploratory activities (Type I enrichment) designed to expose students to new and exciting ideas not covered in the regular curriculum. The second category of enrichment (Type II) consists of group training activities in specific skills and processes.

The final and most advanced type of enrichment is Type III. The goal of Type III enrichment is to provide opportunities for students to become actual investigators of real problems through suitable means of inquiry and to bring their findings to bear on real-world audiences. In Type III enrichment, students become producers of creative products through the collection of raw data, advanced-level problem solving techniques, and the application of research strategies or artistic procedures that are used by first-hand investigators within various fields of study. Detailed procedures and resources for teacher use in the guidance of Type III enrichment have been developed and widely field-tested over the past several years (Burns, 1987; Delisle, 1981; Gubbins, 1982; Karafelis, 1986;

Reis, 1981). These procedures and materials provide teachers with a systematic set of strategies for guiding students through a Type III investigation. A visual display of the Type III process is provided in Figure 1.

Several successful projects based on using Type III enrichment with at-risk youngsters from specific populations have been reported. Baum (1994) identified seven high ability students who were underachieving due to a specific learning disability. These students met for 2 1/2 hours weekly over the course of a school year in an enrichment program based on the *Enrichment Triad Model.* The major emphasis was on students' pursuing Type III investigations. The students completed one group investigation and one individual project each. Six of the seven students demonstrated gains in achievement, self-esteem, and independent learning behaviors.

This model has also been used with economically disadvantaged students many of whom were underachieving in math or reading. In one program, *Alternate Pathways*, (Cray-Andrews & Edelkind, 1993), 25 teachers of primary-aged youngsters in bilingual, special education, and low-achieving classes were trained to identify specific talents and interests in their students and engage them in Type III investigations that integrated both their talents and interests. The identified students showed significant gains in both reading and math.

Another program, *Talent Beyond Words*, used the *Enrichment Triad Model* for developing music talent in inner-city youth. Thirty-three students were identified in third grade as musically talented, most of whom scored below the 50th percentile in math or reading. The students participated in talent development classes twice a week for three years. Their Type III experience included professional performances throughout New York City, Washington, DC, and participation in the Disney summer orchestra. Currently in junior high school, 15 students are still attending Saturday classes and continuing to perform as a musical troupe. All the students are maintaining at least a "B" average and report that membership in the troupe "keeps them off the street" (Oreck & Baum, 1995).

Methods

It was our belief that engaging students in creative productivity or Type III enrichment would have a positive impact on reversing their pattern of underachievement despite the unique issues surrounding each student. We were also convinced that systematically studying the students in a naturalistic setting over time as they engaged in the active pursuit of a self-selected problem would provide us with new insights about the complexity of the problem and the idiosyncratic dynamics accompanying each case. These observations would also afford us the opportunity to identify environmental, psychological, and cognitive factors contributing to or impeding the achievement of the targeted students. With new knowledge and understanding about the manifestation of underachievement, educators would be able to plan effective strategies for reversing this pattern among high-ability students. Hopefully, the insights gained from the study would form the basis for a new paradigm for addressing the problem of underachievement among high ability students.

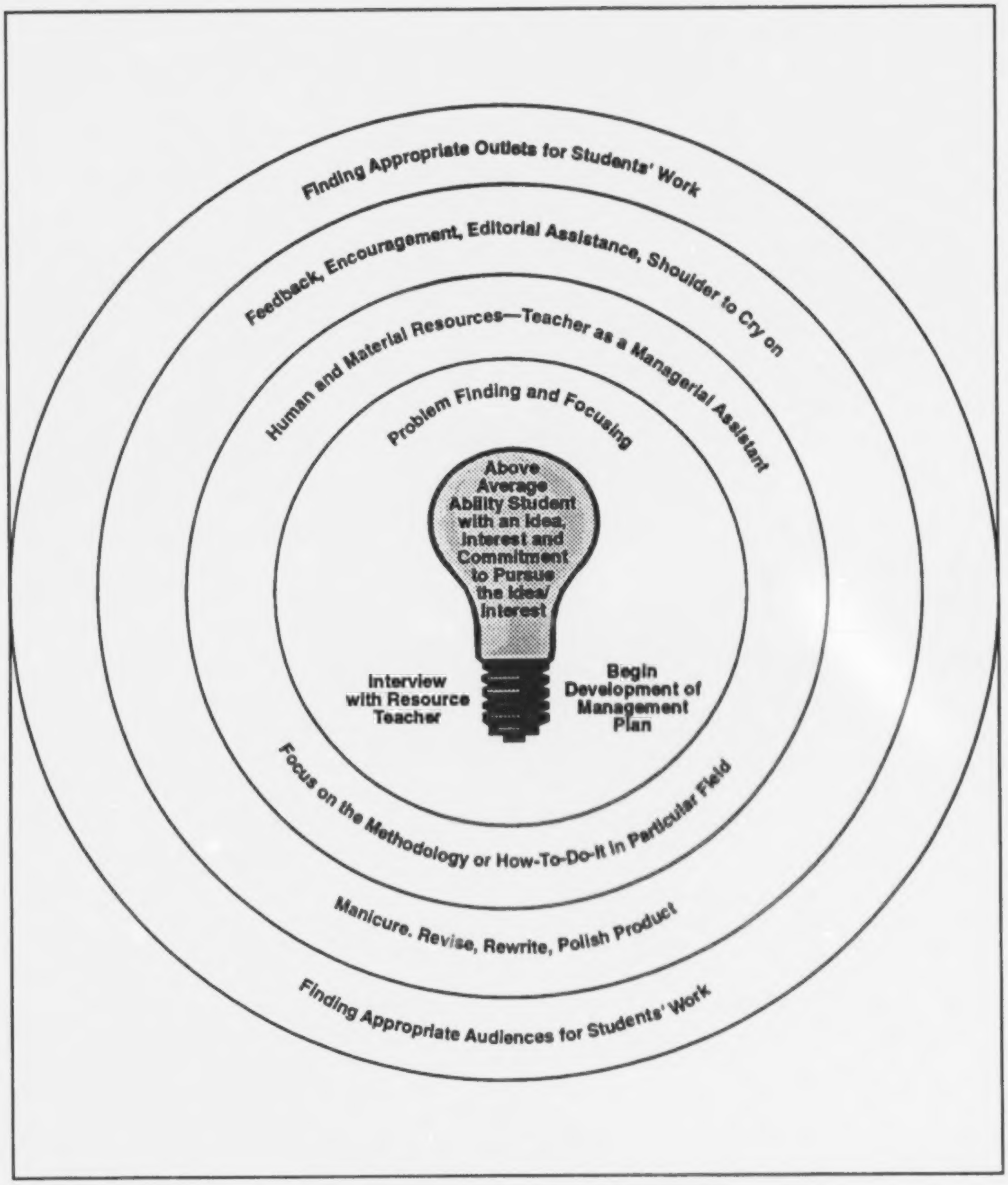
Finding Appropriate Outlets for Students' Work
Feedback, Encouragement, Editorial Assistance, Shoulder to Cry on
Human and Material Resources—Teacher as a Managerial Assistant
Problem Finding and Focusing
Above Average Ability Student with an Idea, Interest and Commitment to Pursue the Idea/Interest
Interview with Resource Teacher
Begin Development of Management Plan
Focus on the Methodology or How-To-Do-It in Particular Field
Manicure. Revise, Rewrite, Polish Product
Finding Appropriate Audiences for Students' Work

Figure 1. Type III process.

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Purpose of the Study

The overall goals of this study, then, were to examine the dynamics of underachievement through a systematic intervention program using Type III investigations, to describe and analyze the effects of the intervention on participating students, and to develop grounded theory about the dynamics of underachievement, and to examine the implications of research findings specifically as they might relate to working with underachieving students with high academic potential in the future.

The specific research questions guiding the study were:

1. What factors contribute to underachievement?
2. How does pursuing a Type III investigation affect particular underachievement patterns?
3. Are there specific strategies that enhance the probability of positive gains resulting from the Type III process?

Who Are Gifted Underachievers?

Generally, gifted underachievers are viewed as students who demonstrate high ability on a measure of intelligence but fail to perform in school at a level commensurate with their potential. However, there are major differences in how this definition is interpreted or operationalized (Butler-Por, 1987; Emerick, 1988). For instance, in some cases the definition is so broad with such vague parameters that most students would qualify for inclusion at some point during their school career. Tannenbaum (1983) provides an example of a definition where an underachiever is defined as a child "who on the basis of the teacher's or teachers' judgment(s) has not achieved for a year in accordance with his capacity." How that capacity is measured or what criteria inform teachers' judgments is sadly missing from the definition. Other researchers use stringent definitions to identify underachievers for research and intervention purposes. Whitmore (1980) in her seminal work with primary-aged gifted youngsters who were underachieving, selected students based on an IQ score of at least 130 on the *Stanford Binet* or the *Wechsler Intelligence Scale for Children* and their exhibiting at least 10 of the behaviors shown in Figure 2, including all of those marked by a check mark.

Perceptions of who is underachieving and who is not is also problematic especially among practitioners. Some students with high academic potential who receive all "As" may be considered underachieving because teachers feel that the student is capable of more challenging work (Ford, 1994). In other cases, poor work habits on the part of the student constitute underachievement even if the student is earning "As" or "Bs." (Emerick, 1995). Some feel the student must be achieving below grade level and prefer a discrepancy formula to determine if the problem is severe enough to warrant the underachievement label (Farquhar & Payne, 1964). Still others distinguish between underachievement as a pervasive problem and non-production within the school environment (Delisle, 1992). These differences in teacher perceptions further exacerbate the problem. Indeed, if a student is perceived as an underachiever, he or she is looked on with disdain, often disliked by teachers, and, consequently, develops behaviors to confirm the adults' perceptions (Mukhopadyay & Chugh, 1979).

- ☐ poor test performance,
- ☑ achieving at or below grade-level expectations in one or all of the basic skill areas: reading, language arts, mathematics,
- ☑ daily work frequently incomplete or poorly done,
- ☑ superior comprehension and retention of concepts when interested,
- ☑ vast gap between qualitative level of oral and written work,
- ☐ exceptionally large repertoire of factual knowledge,
- ☐ a vitality of imagination, creative,
- ☐ persistent dissatisfaction with work accomplished, even in art,
- ☐ seems to avoid trying new activities to prevent imperfect performance; evidences perfectionism, and self-criticism,
- ☐ shows initiative in pursuing self-selected projects at home,
- ☑ has a wide range of interests and possibly special "expertise" in an area of investigation and research,
- ☑ evidences low self-esteem and tends to withdraw or be aggressive in the classroom,
- ☐ does not function comfortably or constructively in a group of any size,
- ☐ shows acute sensitivity and perceptions related to self, others, and life in general,
- ☐ tends to set unrealistic self-expectations, goals are too high or too low,
- ☐ dislikes practice work or drill for memorization and mastery,
- ☐ easily distractible, unable to focus attention and concentrate efforts on tasks,
- ☐ has an indifferent or a negative attitude toward school,
- ☐ resists teacher efforts to motivate or discipline behavior in class,
- ☐ has difficulty in peer relationships; maintains few friendships.

(Whitmore, 1980, p. 237)

Figure 2. Whitmore's checklist to identify gifted underachievers.

With limited consensus about what constitutes underachievement, consistent findings among research studies are almost impossible to obtain unless they are based on similar definitions and parameters. Equally problematic is that the acceptance of a particular definition limits the generalizability of the findings to a particular group of underachievers. In this study, to ensure external validity and generalizability, the definition of gifted underachievement was intentionally broad and left to be interpreted within the context of the individual participating districts. A student was defined as an underachiever if the school could document concrete evidence of **both** high potential **and** concomitant underachievement. Evidence for high potential included one or more of the following: students' eligibility for the individual district's gifted program; high scores on an intelligence test, test of specific aptitude, or achievement test; teacher observations of high ability in certain areas, at certain times, under certain circumstances; a previous record of high achievement or grades; or sample products showing students' expertise or in-depth interest in particular areas. Documentation of underachievement included evidence such as a discrepancy between performance and potential; grades below expectation based on ability; occurrence of behavior problems in regular classroom hindering student achievement; minimal effort shown by student; student attitude displaying indifference and lack of motivation even if achieving adequately; or reports from psychologists, special educators, counselors, or classroom teachers confirming underachievement.

Summary of Research Design

To address the questions raised by this study, a qualitative multi-case study approach was used. This approach is deemed powerful in developing and testing theory when methods based on sampling logic are difficult or impossible to use and when the focus is holistic, i.e., intended to examine the complex dynamics of a system that causes the phenomenon within a context (Lincoln & Guba, 1985; Moon, 1991). Thus, by using a case study approach to examine the effects of the intervention in the context in which the intervention occurred, it was hypothesized that the researchers would be able to consider rich descriptions of underachieving students with high academic potential within a contextual frame where various aspects of the problems were identified and studied over the course of the intervention. Data sources consisted of observations and reflections kept by the teachers in extensive logs, group interviews with the teachers, audiotapes of student interviews with the enrichment teachers, student interviews with researchers, student products, and documents.

Teacher as Researcher

The teacher played a vital role in both implementing the study and collecting relevant data. While facilitating the Type III process with the students, the participating teachers observed and collected data which enabled them to understand the student, to identify relevant issues, and to develop strategies to help students succeed. According to Moon (1991), the teacher is a natural researcher who holds great promise in bridging the gap between research and practice. She explains that because teachers interact daily with students, they are immersed in the raw data of students within the context of learning. This makes their role as teachers also a viable one as participant observers of the education process. When teachers are guiding students through the Type III process, they very much play the role of researcher. Rather than assuming control of the learning process, they become facilitators—helping students to focus problems, to secure necessary materials, to review and revise their work, and to overcome obstacles within the context of pursuing a problem that has great personal meaning to the student. The teachers assumed the roles of mentor, research assistant, and confidant to the students and, as such, discovered much about the personal lives of the students, their emotional issues, their frustrations, and their desires. And, in their extended role as teacher-researcher, they also recorded their observations systematically, reflected upon their entries, and documented strategies that seemed to be effective with the students.

Participating Teachers

Eleven teachers of the gifted from throughout the United States and one teacher from Singapore volunteered to participate in this study. These teachers performed three functions: 1) to nominate a student or students for the study, 2) to guide the student(s) through a Type III investigation, and 3) to assume the role of participant observer, noting student behaviors and events that surrounded the student and recording these observations and interpretations in a log.

All teachers had training in the *Enrichment Triad Model* ranging from entry level (attending at least one Confratute, an annual institute in gifted education at the University of Connecticut where the *Enrichment Triad Model* is taught) to advanced experiences (Master's degree in gifted education from the University of Connecticut or the College of New Rochelle where the model is emphasized). All had some previous experience in guiding high-ability students through Type III investigations. Teachers were asked to select students who had high academic potential but were also judged to be underachievers by special program and regular classroom teachers. In other words, students eligible for the study needed to have documentation for both high academic ability and evidence of underachievement. (See Figure 2, Whitmore's checklist to identify gifted underachievers.)

Student Sample

Seventeen underachieving students with high academic potential from 12 districts throughout the United States and Singapore were selected to participate in the study. Five girls and 12 boys ranging in age from 8 to 12 worked intensively with participating teachers who guided them through a Type III investigation. A summary of the student profiles is shown in Table 1. As seen in the table, all the students demonstrated superior ability on either an intelligence or achievement measure (range 85th to 99th percentile). Evidence for underachievement for nomination purposes fell into the following categories: average or below average grades (11 students); a discrepancy between their score on an intelligence test and their score on a standardized achievement test (4 students); behavior, attitude, or motivation problems (11 students); and special learning or organizational problems (7 students). Often the signs of a student's underachievement fell into more than one category.

The Intervention

The study was carried out during at least one academic year and in three cases for two years. It proceeded through four phases. Phase I involved identifying underachieving students with high academic potential by documenting evidence of high intellectual potential and average or below average achievement. The evidence included scores on ability and achievement tests, grades, classroom records, work samples, and anecdotal information supplied by teachers and obtained from permanent records. In Phase II, a high degree of familiarity with the students' academic record and personal life was obtained through the use of interest surveys, student essays on their feelings about school, and informal interviews between the teacher and the student in a risk-free, non-threatening environment.

During Phase III, teachers worked closely with the students on their Type III investigations. The steps included focusing the problem to be investigated, setting up a management plan with the students, providing necessary resources and strategies for students, and helping students share the completed investigation with interested audiences. The activities during this phase concluded with teachers' conducting structured interviews with their students regarding the students' feelings about the Type III experience and about insights the students might have gained about their individual learning strategies. During the process, the teachers sent monthly reports and logs to the research team at the University of Connecticut and telephoned whenever they wished to share an experience or needed to obtain suggestions for interacting with particular students.

Phase IV consisted of in-depth interviews by the researchers with the teachers about their reactions to the treatment, the effect the treatment had on the students, and the teachers' general perception about the overall experience. The teachers shared experiences and insights, made suggestions, and discussed how they planned to interact with the students during the next academic year. Site visits by principal investigators and interviews with the students themselves were conducted when possible, and telephone interviews were used when visits could not be made.

Table 1

Overview of Student Sample

Student	Gender	Grade	Age	Documentation of High Ability	Evidence of Underachievement
Anne	F	4	9	IQ 133 (Otis Lennon)	Math achievement 31st %ile Reading achievement 43rd %ile Parent concerned about student's lack of effort Average grades
Barbara	F	3	9	IQ 99th %ile (Otis Lennon) Math achievement 98th %ile	Reading achievement 76th %ile Poor classroom behavior Lack of effort Disturbing to others Grades: "B" range
Carl	M	3	8	IQ 120 (Verbal, WISC-R)	Reading achievement 34th %ile Math achievement 83rd %ile Grades: "B/C" range
Drew	M	3	8	IQ 117 (WISC-R)	Diagnosed learning disability Grades: "C" range
Edward	M	9	13	IQ 128 (WISC-R)	Grades: "D/F" range
Fred	M	4	9	IQ 121 (WISC-R)	Reading achievement 46th %ile Math achievement 75th %ile Never completes work Unmotivated Grades: "B/C" range
Gary	M	4	9	IQ 123 (WISC-R)	Learning disabilities in handwriting and spelling Grades: "C/D" range
Hal	M	11	7	IQ 140 (WISC-R)	Parents concerned with student's lack of interest and motivation Teachers report lack of effort Classified as ADD Grades: "C/B" range
Bryan	M	8	14	IQ 99th %ile (WISC-R)	Behavior problems in classroom Disorganized; difficulty completing tasks Grades: "C+" range and worsening
Zaleha	F	9	15	IQ 99th %ile (General Abilities Test)	Lost interest in learning Grades: "D/F" range and deteriorating

(*table continues*)

Table 1 (continued)

Overview of Student Sample

Student	Gender	Grade	Age	Documentation of High Ability	Evidence of Underachievement
Jamison	M	4	9	IQ 120 (WISC-R)	Behavior problem Incomplete work Grade "C+" range
Mark	M	8	13	IQ 98th %ile (WISC-R)	Grades: "C" range
Mitch	M	5	10	IQ 98th %ile (WISC-R)	Work turned in late Totally disorganized Grades: "A" range
Nora	F	5	10	Reading Acievement 87th %ile	No enthusiasm for learning Serious & depressed Grades: Failing most subjects
Mara	F	8	12	IQ 99th %ile (Slossen Intelligence Test)	Difficulty completing assignments Negative attitude Grades: "C" range in all academic subjects
Paul	M	4	9	Achievement Composite 99th %ile (ITBS)	Difficulty completing work Behavior problem in class and on playground Grades: "C" range
Rick	M	4	9	IQ 131 (Slossen Intelligence Test)	Incomplete assignments Poor attitude Grades: "B/C" range but deteriorating

Data Collection

In this multiple case study approach, qualitative data were collected throughout the course of the study. The researchers attempted to gain an accurate view of individual cases by converging on the problem of underachievement from a variety of perspectives (Moon, 1991). Observations and reflections by the teachers recorded in extensive logs during the course of the intervention, group interviews with the teachers, audiotapes of student interviews with their teachers, direct student interviews, student essays, interest surveys, student products, and document review provided information about individual students.

The roles of the researchers as the primary research instrument included interviewer and analyst. Semi-structured interviewing and review of teacher logs were the primary methods used to collect the data. These semi-structured interviews consisted of open-ended questions designed to explore a few general topics in order not only to gain information in "the subjects' own words" but to develop insight on how the subjects interpret some piece of the world" (Bogdan & Biklen, 1982, p.135). The interviews were conducted in order to gain a more precise understanding of the teachers' facilitation of the Type III process with the subjects. By interviewing teacher-participants, a picture of what each participant believed was happening emerged allowing each person to tell his or her side of the story. Similar "grand tour questions" (Spradley, 1979, p. 86) were asked of all the participants in order to obtain each subject's viewpoint on the research questions guiding the study. For example, a teacher might have been asked, "Tell me about changes in behavior that you noticed in the student during the Type III investigation" as a grand tour question. A more specific follow-up question might have been, "Was this behavior also seen by the regular classroom teacher?" The subject's answer to the general questions guided the direction of the interview to obtain a deeper understanding of each person's point of view.

Data Analysis

The data analysis used the constant comparative inductive method (Glaser & Strauss, 1967, p. 105). This method proceeded in four stages: 1) comparing incidents applicable to each category, 2) integrating categories and their properties, 3) delimiting the theory, and 4) writing the theory. Within case analysis preceded cross-case comparisons. Two members of the research team reviewed data and checked each other's conclusions and coding. Where differences occurred they invited the third member of the university team to render a decision.

The information from the logs, interviews, and documents were first read thoroughly and then analyzed through open coding (Strauss, 1987) where all segments were labeled or noted and recorded on index cards. By sorting the code notations, categories emerged by comparing and contrasting notations and relating concepts to experiences and knowledge of the researchers (Glaser & Strauss, 1967). The following is an example of open coding and interpretation taken from a sentence contained in a teacher's log:

Phrase	Open coding
The Phys. Ed. teacher calls him "Lord Jami"	suggest good-natured joking and caring for the student
Jambo adores him	nickname used by teacher suggests a close relationship
Teacher has remarked about his athletic ability	suggests the student may be "active"
recognition of talent	

Once the categories were defined and examples within truly representative, the categories were collapsed into themes for clarity and parsimony, especially as they related to the general questions that were guiding the study. Finally, the themes were used to generate grounded theory about dynamics of reversing the underachievement pattern.

Results

Sample Case Studies

This study's main objective was to understand the underachievement phenomenon by collapsing information across cases. This approach, however, does not allow the reader to experience individual case scenarios upon which the cross-case analysis was based. Therefore, we have provided several vignettes of individual students who participated in the study. These case descriptions are a representative sample of all the students in the study in terms of age, gender, and underachievement issues. Their individual stories of success demonstrate both the nature of the underachievement issues facing individual students and how the intervention affected each of them.

Jamison

Jamison believed he was related to Abraham Lincoln. He had been told for years that the sixteenth President of the United States was part of his family's lineage, but his relatives had never provided him with the information he needed to trace his family history. He wrote to his grandparents numerous times but received no response. Finally, he called them and, to his delight, learned that an older cousin had once traced the history and discovered information which supported Jamison's belief about his family's heritage. Months passed, but the older cousin did not respond to Jamison's request to send the coveted historical information. This situation frustrated the young genealogist, yet this lack of attention from a family member was nothing new to this young man.

Jamison came from a dysfunctional family stricken with divorce, alcohol problems, and accusations of child abuse. His teacher claimed he was neglected at home saying, "He never has a haircut, nor does he comb his hair or brush his teeth. He is frequently alone and has been seen riding his bicycle all over town with no adult supervision." Even his mother claimed "that school is his escape from our rocky home life. . . . His older brother, a high school dropout, is currently in trouble with the law." Jamison was described by his teacher as "constantly in motion." Diagnosed as hyperactive, he was prescribed Ritalin three times daily. Jamison had no positive role models in his family, and his time after school was totally unsupervised. One afternoon, this ten-year-old boy was caught going door to door in the community collecting money for a local baseball team and then taking the money and spending it on himself.

Jamison's social worker described him as a very bright young boy. When tested for involvement in the enrichment program, Jamison scored in the superior range on an individual intelligence test. His classroom teachers recognized his abilities and commented positively about his potential each year on his report card. They noted leadership skills, boredom with routine tasks, easy mastery of facts, keen observation, curiosity, a good sense of humor, divergent thinking skills, attention to detail, and non-conformity. Though Jamison's potential was apparent, his grades had steadily declined, and teachers were exasperated. His classroom teacher from the previous year said, "Last year, he filled in all the dots on his ITBS test."

Jamison connected with the enrichment teacher in his school. As his involvement in enrichment activities increased, his general school performance began to make steady improvements. He became more and more attached to his enrichment teacher, who was facilitating his research in family genealogy. He would gladly do extra work for her and behave in the regular classroom in order to spend time with her. His grades began to improve and his classroom teacher no longer found him to be a problem in the classroom. He even began calling her "Mom" on occasion. His teacher wrote,

> During the past few days, he has said or done something every day to let me know that he likes me and/or to be reassured that I like him. He gave me the name Mom in a computer game we played. When he found my immediate family name in my genealogy booklet he said, 'Gee, I wish my name was there.' I laughed and said I would pencil his name in as my part-time adopted son. After school today he made a gift for me, a heart, and inscribed within was 'Mrs. M is a good teacher.'

The enrichment teacher assisted Jamison in pursuing his quest for information. She suggested he write a letter to the state archivist requesting information. After a year and a half, he succeeded in obtaining conclusive information which confirmed his belief. He then completed his family tree, a family map, and a narrated slide show entitled "Jamison and Abe: 9th Cousins" which he presented to numerous audiences for which he received media coverage from three area newspapers. At the completion of his research on Lincoln, Mrs. M commented,

> This child has so many strikes against him that I can't predict whether or not he'll be a dropout like his brother, but right now I know that his project was important to him. He finally followed through on something. But most important, he and I have formed a bond that will hopefully give him needed support and encouragement.

Mara

She wore pasty white makeup and shredded jeans. Her wardrobe in eighth grade consisted of only black clothing. The petite, young blonde was associating with a group of youngsters suspected of being involved with drugs and who prided themselves on their negative attitude about school. Mara's negative attitude and flippant remarks antagonized her teachers. Her counselor discovered her making arrangements for a limousine joyride through her community for herself and a group of younger boys in her junior high school. Mara had difficulty understanding her intelligence. Since she could figure out math problems without having to do computations and the answers seemed to just pop into her head, she naturally assumed that she had to be a witch. The academic record of this confused, young woman had been declining since fifth grade, and her grades reflected her lack of interest in school work.

Following her thwarted attempt to arrange the limousine joyride for younger students, her classroom teachers, counselor, and enrichment teacher agreed that she needed to spend more time in the school's enrichment resource room where she would pursue her own interests. She became involved in a group project with other young women who were concerned about environmental issues and conducting research for an Earth Day celebration in their school. Mara began associating with these young women socially as her peer group shifted. Through her involvement in the research study, she began to think of herself as a leader and a producer rather than a follower. She continued her work in the enrichment resource room with an individual project whereby she designed a photographic essay on emotions expressed by junior high school students. After she photographed students throughout the building, capturing the emotional trials and tribulations of school life, Mara created a display with her photography, and became recognized for her newly found talent. Impressed with her efforts and her perceptions of the junior high school experience, the school's principal requested that she serve as an orientation guide for the incoming students the following September. Mara's grades improved, her peer group changed, and, eventually, her appearance changed. The white makeup, black clothing, and the shredded jeans had disappeared.

Mark

"Lost in the shuffle" is the best way to describe Mark, a bright, underachieving eighth grader. This reticent young adolescent, who stammered when he spoke, was facially scarred at the age of seven when attacked by guard dogs. Feelings of inferiority pervaded this teenager's self-image, the third in a family of four boys, even though he was musically talented and the leader of the percussion section of the junior high school band. His family was highly academic; his oldest brother excelled in math, and the second son, a highly motivated student, achieved exceptionally well in all areas. His parents were both teachers who placed a high value on academic excellence.

It was of great concern, then, when Mark began to receive "Cs" and "Ds" during seventh grade despite superior scores in the top third percentiles on standardized achievement tests. Although he never overtly acted out, he quietly resisted putting forth any effort towards improving his grades despite parental supervision and encouragement. His parents suspected that an undiagnosed learning problem might be causing Mark's academic deterioration and reluctant attitude.

At the parents' request, the school arranged a conference to discuss Mark's lack of progress and to suggest some strategies to remedy the problem. Those attending this meeting discussed relevant information about Mark. The enrichment specialist revealed that Mark was highly interested in science and technology, especially in solar-powered vehicles. The enrichment specialist volunteered to help Mark pursue this current passion. Their first activity was a visit to a local engineering college to meet with a professor and his students who were designing a solar car for entrance in an annual contest. Although Mark barely spoke during the visit, he chatted incessantly and with great enthusiasm on the return trip, when he confided to the enrichment specialist about his desire to design and build his own model of a solar car. Together they planned the project and located additional resources and supplies. He met daily with the enrichment specialist to discuss progress and problems he was encountering.

By the project's end, Mark exuded a new sense of self-confidence. His grades began to improve as he gained a new awareness of his talents. He demonstrated a renewed sense of purpose as he planned his high school schedule for the upcoming school year. He asked for a complete psycho-educational assessment to determine if he had a subtle disability that needed attention, but subsequent testing found no evidence of such a problem. He purposely chose electives of mechanical drawing and computer technology to pursue his strengths and interests.

By his sophomore year in high school, not only was Mark earning "As" and "Bs" in honors math and science courses, but his stuttering had diminished also. Instead, this young man, no longer living in the shadow of his brothers, was looking ahead to a bright future as an engineer.

Bryan

Bryan was described by teachers as a serious behavior problem—a young man who was always in trouble on the school playground. He was identified as emotionally and behaviorally disordered and had been tested but did not qualify as learning disabled. As an eighth grader, Bryan was achieving grades of "C" and "D." His verbal abilities on an individual intelligence test were within the very superior range (99th percentile); however, he scored significantly lower (40th percentile) on the visual perceptual sections of the test. His academic progress report included comments by teachers which read "insufficient effort" and "missing or late work" which reflected his general dislike for school subjects.

Bryan arrived in the enrichment teacher's classroom complaining about his social studies curriculum. His eighth grade class was pursuing a mock trial, and Bryan found himself frustrated. He argued that he could write a new court case for the eighth grade court drama. "I don't like the old one; it's got some stupid character like Candy Cane in it, and I think we could do a better job."

He began working on the project with a friend. When his friend became tired with this work, Bryan pursued it single-handedly. Bryan was able to convince his social studies teacher to compact his curriculum to provide additional time in the enrichment resource room to work on his court drama. Bryan kept working on the court trial script for an entire academic year. He had his work proofread by two civics teachers and returned to the drawing board following their feedback.

Bryan discovered that he was better able to concentrate on his writing if he composed on the computer while "plugged into" his music. He spent marathon sessions on his computer while wearing his Sony walkman. Adapting to his own style provided him with rock and roll music and a way of focusing on his work. His teacher commented, "The minute that you took the music away, everything in the room distracted him; the minute you took the computer away, he was abysmal."

Bryan worked doggedly on his court case because it was to be performed in several classrooms in the fall. Halfway through the project, he expanded his interests to include writing his own novel while working on the court case script. His enrichment teacher reported,

> He got into about 40 pages, came into my room, threw it on my desk and said, 'Here's a new novel and it's on Norad.' This was a kid who was tested as not being spatially perceptive yet he had a complete diagram of this Norad underwater installation. It was a visually perfect graphic. It came to him on a 14-hour stint on the computer. What we found was if you had Bryan in front of the computer and you plugged music into him, he could focus.

When he discovered the environment he needed to be successful with his writing, he negotiated with his English teacher to leave the classroom and work in the computer lab editing and rewriting his regular classroom work. The English teacher was conducting a writing workshop approach, and Bryan found that it was too noisy for him to concentrate on his writing. While the writing workshop approach is highly successful for most students, this instructional strategy was problematic for Bryan as it often is for students with attention deficits. The noise and the student movement in the classroom distracted him, but Bryan shared this problem with his teacher. They agreed to have Bryan complete his writing in the computer lab. Bryan met with success in his own learning style and his grades began to improve. By the fourth marking period, Bryan's grade in English had gone from a "D" to a "B," and the young script writer was feeling positive about the upcoming performance of his court trial as well as the progress on his original novel.

Zaleha

"Don't they know there is more to life than getting an 'A'," declared Zaleha, an angry 15 year old student. Zaleha, a Malaysian native, was living and attending school in Singapore. As a sophomore in high school, she often felt disgusted with her Chinese friends. She could neither understand nor accept their competitiveness and never- ending drive to achieve, especially since members of the Malay culture valued a less hurried and less competitive lifestyle. Zaleha complained that most of her friends had joined "the rat race" where success as an adult depended on material gains derived from high academic achievement.

Zaleha was a rebel, questioning the prevailing attitudes of her peers. This rebellion resulted in a complete disregard for academic pursuits. Although she was a bright, young woman (99th %ile in abstract reasoning on the *General Abilities Test*), with an insightful sense of humor as well as a talent for drawing, she was failing all her academic subjects. Worse, she seemed to lose her desire to learn. Because one of her teachers, the enrichment specialist, became concerned about her poor grades and negative attitude, this teacher attempted to motivate Zaleha by inviting her to undertake a project of personal interest. Zaleha accepted the invitation, and it was not surprising that she defined the issue of achievement/underachievement as her major concern. Zaleha decided to create a comic book as a satire on the topic. Using the technique of "choose your own adventure book," she cleverly described and explored the topic.

Zaleha met weekly with the enrichment specialist over the course of the project. During these sessions, Zaleha revealed her discontent with her academic classes. She found many subjects to be boring and unchallenging. She criticized her science teacher for being too directive and leading students to predicted findings, which limited the students' creativity and the excitement for discovery. Also uncovered while observing Zaleha in the process of writing her book was a series of learning difficulties. Procrastination and disorganization led to many uncompleted assignments. When faced with a complex task, Zaleha often became frustrated and gave up trying. Some days she claimed she could no longer continue the project because she had lost her inspiration. The enrichment specialist would provide specific strategies to assist Zaleha to overcome her blocks to completing her comic book project. By the conclusion of the project, Zaleha began to apply these same learning strategies to completing her regular academic assignments. For instance, she told her teacher that she had learned to start an unpleasant chore as soon as possible so that she would have more time to work on preferred activities. Her final product revealed her attention to detail, insightful perceptions, and zany sense of humor.

Cross-Case Findings

As shown by the vignettes, the teachers learned about the home, school, and motivation patterns of individual students while working with the students on their Type III investigations. Although specific details were often idiosyncratic to individual students, qualitative analysis of information gleaned from logs, student interviews, and products across cases led to the emergence of specific patterns of underachievement. These patterns suggested tentative answers to the three research questions posed earlier. The conclusions and supportive documentation drawn from the data for each question are described below.

Factors Contributing to Underachievement

The first research question explored possible factors and combinations of factors contributing to each student's pattern of underachievement. It became increasingly evident that four factors contributed to the underachievement of students in the sample: emotional issues, social and behavioral concerns, inappropriate curriculum, and learning disabilities/poor self-regulation concerns. Although the students may display behaviors in more than one factor, a primary factor and several supporting factors generally emerged for each student.

A profile of factors contributing to underachievement that existed for each student is provided in Table 2, as is a summary of the frequencies of both primary and secondary factors contributing to underachievement in this sample of students. Emotional issues were the most frequent primary factor; curriculum issues and learning disabilities/poor self-regulation second; and social/behavioral concerns the least frequent factor

Emotional Issues

were a primary factor for six of the students. This factor included dysfunctional families, the students' extraordinary need for attention, perfectionism, and depression. For example, Jamison, the fourth grade student described earlier, came from a dysfunctional family stricken with divorce, alcohol problems, and accusations of child abuse.

Edward, a high school freshman, also came from a family with problems. All four siblings were also underachievers with high academic potential, and there was reported abuse in the home. The parents seemed to have no effective strategies for dealing with any of the children. Although his mother claimed that they supported this young man's education, whenever the enrichment teacher asked if either parent could drive the student to an event that related to his interests or project, they found many excuses for why they were unavailable. The school psychologist confirmed this inconsistency between what the parents said and what they actually did and felt the student's home life was a major factor contributing to his underachievement. The student himself spoke of finding a hideout in the woods where he could just be by himself. He claimed that he worried about failing because his teachers and parents would be disappointed in him. On the other hand, he asserted, "I'm not used to doing well. I don't think my life would change greatly if I did well." Both Jamison and Edward seemed to lack a nurturing home environment with appropriate attention from their families.

Perfectionism and depression also explained some students' underachievement. Anne, a fourth grader, complained of migraine headaches in school. "I worry a lot, especially about writing and taking state tests. My mother says I should get all "As." She never lets me do my projects on my own." When asked when her headaches came on, she replied, "When I have to read or write." Surprisingly, when asked what her hobbies were at home, she explained, "I love to write stories and poems that don't rhyme. . . . No, I don't get a headache when I am writing on my computer at home." Her mother claimed that her daughter "is acutely aware that with very little effort she could accomplish what others struggle to achieve. I need to keep prompting her or she will never work hard."

Table 2

Contributors to Underachievement for Individual Students

Factors	Students																	Primary	Secondary	Combined
	Anne	Barbara	Carl	Drew	Edward	Fred	Gary	Hal	Bryan	Zaleha	Jamison	Mark	Mitch	Nora	Mara	Paul	Rick			
Curriculum/Learning Style			P	S	S		P	P	S			S				S	P	4	5	9
Social/Behavioral					S			S		P	S			S	P	P	S	2	5	7
Emotional	P	P	S		P	S					P	P		P				6	2	8
Learning Disabilities/ Poor Self-Regulation				P	S	P	S	S	P	S	S		P	S			S	4	7	11

P = Primary Contribution
S = Secondary Contribution

Nora, a fifth grader, felt the pressure of parental high expectations, also. She revealed that her father had told her never to tell anyone when she made a mistake or didn't know something. She learned to treat life seriously. Even when she finished her Type III investigation, she revealed that she was excited about her book on ballet and hoped others would be, but added, "It may not be as important as their schoolwork. . . . I do hope that people appreciate the work I put into it." In both cases, parental expectations seem to have taken the fun out of learning and have had a profound impact on inhibiting their child's achievement.

Social and Behavioral Concerns

These concerns contributed to underachievement in eight of the students in the sample. The specific concerns included in this category were the influence of an inappropriate peer group, questioning of social values, and lack of behavioral controls and social skills. Mara whose bizarre dress and negative attitude were described earlier is a prime example of underachievement due to the negative influence of an inappropriate peer group. In fact, when she became part of the study she had to miss the choir to meet with the teacher of the gifted. Her negative attitude and flippant remarks made the choir teacher reluctant to allow her to leave. The special program teacher reported, "The choir teacher called, saying that the student had just flipped her hall pass in front of her face and announced, 'I'm leaving."

Edward, previously described as coming from a dysfunctional family, admitted that he got into trouble in school because he had an image to uphold in front of his peers. He attempted to hide his interest in learning when his friends were present. For example, he never responded in math class when the teacher asked if anyone had a question. The teacher, in turn was resentful when this same student approached her privately to ask for a math tutor. The teacher of the gifted reported that he acted very differently with her when they were alone than he did if one of his friends was present. "He seemed shy around [his friend] when discussing his interest. In fact, when I wanted him to do an evaluation of a computer program, he avoided agreeing when [his friend] was present."

Some students, especially during adolescence, question prevailing social ideals. such as Zaleha mentioned earlier, who questioned the fast-paced learning and pressure to achieve and compete. Her teacher explained that "she feels out of touch with the majority. Her friends in class are the Chinese girls. She is the only Malaysian girl in class. The Malay culture is very easy-going, so it may be a conflict for her to be part of the rat race." While confronting this conflict the student put forth minimal effort in her studies and, in fact, appeared lethargic and tired.

For other students, obeying school rules was problematic. Paul, a fourth grader, was described by his teacher " as a very bright student who has a difficult time achieving in the classroom because he was a severe behavior problem." The problem worsened as the year progressed, and in February he was referred to the special education staff for a complete psycho-educational evaluation. He was subsequently diagnosed as behavior disordered with a lack of appropriate social skills and behavioral controls.

Inappropriate Curriculum

Nine of the students were simply not motivated by the regular curriculum. Some believed there was no challenge offered in the curriculum while others preferred different styles of learning. Bryan, for instance, saw his participation in the study as a way to be excused from social studies, a course he disliked. He argued that if he could test out of the class he would write a new court case for the eighth grade court drama.

Zaleha also complained that too many subjects were "too content based." She indicated that she preferred chemistry "because it is more interrelated and requires the application of skills. I think students should be allowed to study what they like and have an interest in."

Many of the students in their essays on their views of school believed there should be more time made for projects. In fact, Gary, a fourth grader, revealed that he learned much better when he was allowed to make things. "Projects are neat because I am good at [them]. I would like to make projects all day to help me learn." Hal, a seventh grader concurs, "I think homework should be more projects and a lot more oral things. By that, I mean maybe they should have learning tapes instead of writing and reading. I think they should show more movies and have more trips. I really like working in a group especially with the top kids." He is not in the top group in his classroom and is angry about it. "For me, I'm in a situation where I can't move up in a group to the group level that I should be in because of the situation of crowding."

Learning Disabilities and Poor Self-Regulation

The final contributor to underachievement and the factor that appeared most often as either a primary or secondary contributor was the presence or suspicion of a learning disability or poor student self-regulation—"command and application of appropriate learning strategies" (Baum, Owen, & Dixon, 1991). These two areas overlap greatly. In fact, the major difference between underachieving students and students with learning disabilities may be simply that one can receive special education by law and the other can not. The students may have been diagnosed as learning disabled or have been referred for poor reading, handwriting, or spelling skills. Other typical complaints included disorganization, failure to complete assignments, forgetfulness, and lack of time management skills or attending skills. Bryan demonstrated behaviors that could easily fall into either category. According to the teacher of the gifted:

> In sixth grade this student was a basket case—a behavior problem always in trouble on the playground. ADD (attention deficit disorder) was suspected but ultimately ruled out. He was then assessed for the presence of a learning disability or behavior disorder. However, I think the hardest thing for this young man was learning how to edit, organize, and attend to his work.

Mitch, a sensitive fifth grader, was described by his enrichment teacher as having poor work habits. His teacher recorded in his log:

> Everyone wants to teach him until they get him. He drives them crazy. He cannot focus his attention on anything. He's the proverbial space cadet. He's very bright and very disorganized. When I looked at his grades, they were really good. His regular education teachers had no knowledge that they had given him those grades or how he could possibly have earned them! The teachers predicted that if his deplorable work habits did not improve, his grades eventually would suffer.

Effects of Intervention on Manifestation of Underachievement in Individual Students

The second research question examined the effects of the Type III process on individual students. Fifteen out of the 17 students completed their Type III investigations and made positive gains during the course of the year or in the year following the Type III intervention. (No gains were reported for the students who did not complete their projects.) These changes were documented by report cards (grades and teacher comments), achievement test scores, teacher and parent informal interviews with enrichment teachers, student interviews, and a group interview with the enrichment teachers. Improvement was noted in achievement, effort and attitude regarding school, self-regulated behavior, and classroom behavior. Table 3 summarizes the gains achieved by individual students. As shown in the table, 11 of the students showed improved achievement. Some made gains in particular subjects while others gained in most areas. Several students went from failing grades to grades of "A" and "B."

Reports by parents and teachers showed that 13 of the students showed more effort in completing class work and were more positive about school. For instance, Mark's mother wrote to enrichment teacher that her son had "come alive" through his participation in the project. He used to be so quiet. Now he can't wait to tell us about his solar car (Type III project)." The teacher continued to receive letters from his mother over the next two years with articles about Mark's achievements—honor roll student, winner of the science fair. Another enrichment teacher forwarded a copy of a classroom poster revealing Gary as "Student of the Month" for achievement and effort in the year following the intervention.

Five of the students reported they had acquired successful learning strategies while working on their project and were using them in the classroom. Bryan negotiated with his English teacher to allow him to complete his writing assignments on the computer in the learning lab and was able to attain a B that marking period. Mitch claimed that he began to keep a management plan with deadlines to help him get his projects done on time in the classroom. When Nora was asked what learning strategies she learned and was applying to the classroom she replied, "Never take any papers you're working on home from school unless you first make a copy of it that will stay in school. My teacher says I'm not losing things as much."

In four cases students showed marked improvement in their behavior. One example is Rick. His enrichment teacher explained:

> Rick was arrogant and acted out in class consistently. He especially got into trouble on the playground because of his heightened sense of justice. If he thought kids were not being treated fairly he protected them with his words and fists. His Type III investigation also was generated by his sense of justice. The school policy that only students who bought hot lunch could have chocolate milk so infuriated him that he led a campaign to get the policy changed. His campaign was successful and the students regarded him as a "hero." There has been no more fighting in months, and he is getting along fine with his newly found friends.

Table 3

Student Needs, Type III Projects, Focus of Intervention, and Results

Student	Contributors and Needs	Focus of Intervention (Need Gratification)	Project	Student Change
Anne	Emotional Issues Perfectionism Headaches Problems with mother	Positive caring relationship with teacher	Design a prototype environment for birds for NASA experiment	Grades improved to "A/B" range Headaches less frequent
Barbara	Emotional Issues Pressure to get As by parents	None	Designed an original math game to make math fun but would not share it	No change
Carl	Curriculum Bored with school	Project of interest to student	Designed a rocket for launching in festival	Grades improved to "A/B" range Math achievement - 85th %ile
Drew	Poor self-regulation and learning problems	Teacher did not supply strategies of guidance	Project not completed Electric car and track prototype	No change
Edward	Emotional & social issues	Felt needed by achieving peer group	Teaching a computer class Set design for drama club	Grades improved to As & Bs after 2 years
Fred	Poor self-regulation in completing work	Used project to understand how brain works	Comparative study of brain functioning in humans and rats. Question? How does the brain tell muscles what to do?	Grades: "A/B" range Parents report improved attitude about school Work consistently completed
Gary	Learning styles & curriculum project	Allowed to complete a project in preferred learning style	To create a series of relief and topographic maps to enrich social studies unit for class	Grades improved to "A/B" range "Student of the Month" award in fifth grade
Hal	Curriculum & social issues Poor self-regulation	Working on project with other high ability students Teacher did not assume facilitative role	Helped design and construct a school planetarium	No improvement in grades or organization. Attitude about school improved while working on project. Set goals to qualify for gifted program

(*table continues*)

Table 3 (continued)

Student Needs, Type III Projects, Focus of Intervention, and Results

Student	Contributors and Needs	Focus of Intervention (Need Gratification)	Project	Student Change
Bryan	Poor self-regulation skills Poor curriculum	Law Simulations	Provided self-regulation strategies	Improved grades in some areas Positive attitudes about school and achievement
Zaleha	Social/cultural issues	Used project to explore issue of underachievement	Wrote "choose your own adventure" book on overachievement and underachievement	Improved grades to "B" range. Teachers commented on marked improvement in motivation and self discipline
Jamison	Emotional issues Dysfunctional family Lack of attention	Strong relationship with teacher	Genealogy research to prove he was related to Abraham Lincoln	Improved grades to "A/B" range Completed assignments Improved behavior
Mark	Emotional issues Shy, lack of confidence	Relationship with teacher and successful completion of challenging project	Design a prototype for a solar car that is affordable and environmentally friendly	Grades improved Is an honor roll student Has won prizes at science fairs
Mitch	Poor self-regulation	Teacher provided strategies in context of project	Designed a cartoon strip for publication on a real issue "Appearances"	Learned time management and organizational strategies Teachers noted his work was turned in more consistently on time
Nora	Emotional issues Depressed Perfectionist	Caring relationship with teacher	Wrote original book on ballet to teach students about that dance genre	No improvement in grades Proud of book but worried about its importance Organizational skills improved

(*table continues*)

Table 3 (continued)

Student Needs, Type III Projects, Focus of Intervention, and Results

Student	Contributors and Needs	Focus of Intervention (Need Gratification)	Project	Student Change
Mara	Social behavior issues Inappropriate peer group	Opportunity to interact and become liked by achieving peers	Photo essay on life in Junior High to use to orient new students	Grades improved to "B" range in all academic areas Associates with achieving peer group Positive change in attitude and appearance
Paul	Social behavior Acted out for attention	Positive attention (relationship) with teacher	Experimental research on behaviors of hamsters	Grades improved: As in all subject areas except math (B)
Rick	Curricular issue Social behavior Poor self-regulation	Choice of curriculum options project found him accepted by peer group	Started and led a successful campaign to change lunch/milk policy	Grades improved to "As" in all subjects Became class leader

Examination of the dynamics that occurred during the course of the intervention revealed a possible explanation for the success of the intervention across students whose problems and patterns varied. The Type III experience is a multi-faceted intervention. It provides an authentic problem-based curriculum, allows students to work in an area of interest and strength, and supplies a caring adult with whom to work. A management plan helps to organize the project into manageable parts and offers students the opportunities to interact with others with similar interests or talents. The cross-case comparisons appeared to indicate that the intervention served different purposes or fulfilled different needs, depending on the factors contributing to each student's pattern of underachievement.

For different groups of students, different features of the Type III process were most compelling. For instance, if a student tended to underachieve to gain attention from an adult, the relationship with the teacher-mentor was the most important feature of the intervention process. On the other hand, if the student was bored with her regular curriculum the opportunity to work on a self-selected project stimulated her achievement. Five features embedded in the Type III process evolved as a major focus of the intervention for different groups of students, and are described below.

Relationship With Teacher

In the cases where students had a need for positive attention from an adult due to the lack of support in the home environment, relationships with teachers became the most important aspect of the Type III process. One example was the case of Jamison who developed a strong bond with his teacher during the course of the project. As described earlier, he even began calling her Mom on occasion.

At times the teacher went home feeling emotionally drained by their relationship. "I don't want to sound callous, but I found that by the end of the year I was so emotionally drained that it was almost a relief to not have that with me day in and day out."

Learning Strategies or Compensation Techniques

For the students who seemed to have poor learning or organizational skills, completing a Type III helped them become aware of strategies which facilitate learning. While the students were pursuing their Type III investigations, teachers discovered learning obstacles like poor time management, a student's inability to keep track of his/her belongings, and poor concentration. When these problems surfaced, the teacher would suggest strategies, or the students would invent their own ways of solving the problem.

Bryan had difficulty with organization. The teacher gave him a box labeled "Bryan's Stuff" to keep in the resource room and a file folder next to the computer to store work in progress. To assist him in organizing the steps to complete his project, the teacher and the student prepared a management plan with a time line. (See Appendix A.) She also gave him strategies for editing his work, "When he showed me his schedule of events sheet for his simulation, I asked him several questions about how it worked. This helped the student figure out the sections that needed revisions." This was the same student described earlier who discovered he could concentrate best when writing on the computer and "plugged into Music." Once aware of this strategy, he applied it to other areas. His teacher voiced her pleasure at his taking responsibility for his own learning when she explained in her log, "Bryan initiated this [compensation strategy] on his own. Hurray, he has learned to advocate for his learning needs."

When asked at the completion of his investigation what learning skills he had used that would be useful in the classroom, he replied:

> Probably the best thing that I have learned from writing this trial simulation is just to keep going. And no matter if it bogs down; just stick with it. Eventually it will be done, and then you can go on to something else. You just keep looking forward, not like thank God, it's over, but to see that my simulation will actually be put to use is just overwhelming.

Opportunities for Investigations

Sometimes the students seemed to use the Type III process to investigate an area relating to their underachievement. Fred, for example, had conducted a comparative study of the brain functioning in humans and rats. He built models of each brain and described how the physical brain allowed for advances in human activity. His original research question was "How can the brain tell muscles what to do?" When interviewed at the end of the year, he was asked if he was still underachieving. He answered, "No." When asked to explain why he had been underachieving and what had happened to cause the change, he explained:

> I used to never get my work done. My classroom teachers told me that I take too long in getting started. But I told him that I needed to think about things for a long time. He told me that I could actually think and write at the same time. I wondered how that was possible. Then about a month ago I was thinking about something and looked at my hand and saw that it was writing!

Fred's study of the brain was his way of exploring the issue of thinking and writing at the same time. Zaleha was questioning the extensive drive to achieve she witnessed in her peers in Singapore, while she herself frowned upon such pressure. To understand both points of view she designed a "choose your own adventure book" in which she characterized the plight of the overachiever and underachiever. (This format allows the reader to follow the path of one or the other depending on which behaviors the reader selects. See Appendix B.) The Type III product for both of these youngsters became an outlet through which they were able to confront their feelings about underachievement and resolve the conflict.

Working in an Area of Interest

For many participants in this study, the Type III investigation provided an opportunity to choose a topic of interest and create new knowledge in a preferred style of learning. Many of the students were interested in science and technology and seemed to prefer hands-on learning and completing projects. Gary expressed a love for project work and became animated at the mere mention of doing science experiments. He had become interested in geography and maps in social studies that year. He wanted to combine his interest in geology with his interest in maps. When the teacher asked him to read more on the topic, he rebelled. "He was unwilling to do any sort of research into his interest in maps. He immediately wanted to start making a model of the earth showing the continents and the inner layer of the earth." He did consent, however, to do background research when it entailed visiting the local university's extensive map library and conferring with an expert in cartography. This kind of research and product reflected his style preference. Based on the success that this student experienced pursuing his own strengths and interest, his fifth grade teacher allowed him to do more projects and use the computer in class the following year. As a result, his grades improved, and he was selected "Student of the Month." After receiving his last report card, he commented to his teacher, "This is the first time I can remember feeling good about my grades and school."

Interacting With Appropriate Peer Group

The final focus of the Type III process was that, for some students, it provided access to a peer group that was more involved in advanced academic activities. Acceptance by students who valued achievement was powerful in reversing the pattern of underachievement in several of the students. When Mara, who had been associating with an undesirable peer group, began the Type III process, she became more involved with the students in the gifted program who were working on environmental issues. She began associating with other young women on an Earth Day project and spent increasingly more time with them. In addition, her own Type III investigation focused on photographic interpretation of student emotions to be used as part of a formal introduction to the middle school. As was described in the vignette, Mara experienced a complete transformation from an arrogant teenager with an attention-getting appearance to a well-dressed pretty young lady who became active in school events along with other achieving students, her new peer group. Her teacher remarked in her log:

> She really opened up and became very chatty during the final stages of the Type III process. She beamed as many of her eighth grade friends saw her collage. One of the members of the G/T staff commented on how pretty she had become this year. Her hair is clean and shiny; she wears light makeup and her clothes, pastel in color, are neat and clean.

Strategies That Promote Success

The third research question focused on teacher strategies that influenced the degree to which positive change occurred in the students. Because the intervention had a greater impact on some students than it did on others, the question emerged as to whether or not particular teacher behaviors affected the results. An analysis comparing the methods of the enrichment teachers whose students made the most gains with those whose students gained the least sought to discover differences in teacher strategies. Information was obtained through teacher log entries, records of phone conversations with the research team, and focus group sessions. The students who made the largest gains in reversing their underachievement worked with teachers who took time to get to know the student before initiating Type IIIs; who focused on students' positive qualities; who saw their roles as facilitators, not teachers; and understood the Type III process. These teachers applied their role as researcher to understand and serve the students. Most important, perhaps, was their belief in the students' abilities and their willingness to convey this belief to the students. These strategies are described below.

Knowing the Students

Teachers of successful students would explore the students' interests, concerns, and hobbies with them, such as discussing books or articles relating to the interest area, accompanying students on visits to interview local experts, and arranging phone interviews. When the teacher tried to identify an interest in the student too quickly and force immediate productivity, the students never seemed to get into the process.

In the cases of Edward and Rick, it wasn't until year two that the real passion was discovered, and the intervention became relevant. An example of this contrast in teacher behaviors is illustrated below.

Mark, who made considerable gains after the intervention, was interested in science and technology. His enrichment teacher arranged a visit to a local college where engineering students were designing solar-powered vehicles for an annual competition. The student became fascinated as he watched these collegians assemble their vehicle. His teacher explained:

> Usually passive and reticent he surprised me with his enthusiasm on our trip home. He spoke of the need for solar energy as a solution to conserving oil. The next few weeks were spent on obtaining information about solar energy and solar-powered vehicles. During this period, he began to talk about designing a car that would be run on solar energy, be relatively inexpensive, and safe to drive.

It was not until this point that Mark began his project. By way of contrast, the process was very different for Hal, who made no substantial improvement. When Hal was accepted for the study, his enrichment coordinator invited him to work on developing a school planetarium, a project that other high ability students were developing in their enrichment program. Although he had an interest in science, his major areas of interest were in the fine arts. The coordinator placed him with the group of students where he was able to assist the other students with the art aspects of the project. No time was spent on sharing specific interests and discovering what project would truly interest Hal.

Focusing on Students' Positive Qualities

Teachers of successful students often ignored the fact that the student was an underachiever and focused on the development of the Type III investigation instead. In cases where the teacher spent time "running interference" for the student with the classroom teachers or trying to make sure that the student had completed classroom assignments, the student was resistant to the intervention. The case of Edward provides an example of both scenarios. In the first year of the intervention his teacher spent considerable time and energy talking to his teachers about his lack of progress as the following log excerpts illustrate:

> **March 2** Spoke with science teacher today she is very frustrated with him because he is not doing lab work. It appears he will not pass science this year. I told her I would speak to him about science on Monday. . . .
> Guidance counselor spoke with me today. It appears the English teacher is concerned about [student's] failure to complete assignments. . . .
> **March 3** Talked with [student's] math teacher before school today. It was obvious she did not want to cooperate. . . .
> **March 13** Spoke with several of his teachers today. . . .

Edward made no progress that year and failed to complete the project he had begun. The next year, however, he approached the enrichment teacher and asked her if he could teach a course in computers to her elementary students. She agreed but told him that "academics were his problem and that she would be supportive, but their time would be spent on developing his computer course." Edward changed considerably that year and the next. His grades improved; he had friends who were achieving; he actively participated in the drama group; and he even played on the high school football team.

Viewing Their Roles as Facilitators

Successful teachers focused the energies on locating and providing resources for their students, meeting with the student several times a week. Some managed to see the students daily. They did not expect independence or require that the majority of the project be completed at home. They made suggestions when the project seemed to be at a standstill but never assumed control.

For instance, Nora was writing a book on ballet to help other students understand the dance genre. Unfortunately, when she kept losing her notes and ideas for the book, she became discouraged and depressed. The teacher contacted a member of the university team and discussed the problem with him. They decided to encourage the youngster to make Xerox copies of work in progress to be kept in a folder in the enrichment room. In addition, the enrichment teacher had her check in daily to discuss her progress and goals for the book. The student's pessimism and discouragement slowly were replaced by determination and confidence.

> When the researchers interviewed Drew's enrichment teacher, however, the teacher complained that Drew never managed to obtain what he needed to build his electric car track. The teacher reported that this was his problem with everything but that he just doesn't follow through.

Understanding the Type III Process

Successful teachers recognized that students were acting as practicing professionals, using methods of inquiry and tools of the discipline. They comprehended that the investigation should have real-world purposes and authentic audiences, rather than simply being considered a project to be graded and taken home. They did not confuse the concept of hands-on inquiry and creative productivity with independent study or library research. The dichotomy of these approaches was evident in Gary's case. When he began his Type III on designing relief and topographic maps to help students see the geographic features of the countries they were studying, his teacher sent him to the library to research information about land elevations. When he refused, she contacted the university research team for some suggestions. They reminded her to think about how the professional cartographers collect data for their work. Together she and the research team generated alternative data-gathering strategies, including a trip to the map library at the local university and a field experience with a surveyor where the student learned how to collect data using a transit, a surveying instrument. "The change in him was amazing." explained the student's teacher. "You should have seen him in the map library. He didn't want to leave. The librarian was impressed with his knowledge and enjoyed speaking with him."

Appling Their Role as Researchers

Successful teachers were able to see the dynamic nature of the underachievement problem and provide strategies as needed. Their logs were filled with emerging hypotheses about the students. Even though the logs were for research purposes in documenting student progress, they also helped the teachers to capture the complex dynamics of a student's pattern of underachievement and to evaluate what strategies were appropriate in helping that student succeed. The teachers were not afraid to discuss with the researchers their interpretations of students' behaviors and their frustration in dealing with them. They were open to suggestions and alternative ways of examining the problem as noted in the scenario of Fred and Mitch above. On the contrary, other teachers observed students but did not fully participate first hand. They did not contact the team during the process nor design and reflect upon strategies to help the student **within the course of the Type III process.** In the case of Hal, the youngster who was assigned to the planetarium project, it was clear that he had little contact with the enrichment teacher who had selected him for the study. Rather than observe the student during the process the teacher spoke to him now and then after school. In a summary letter to the team, the teacher reported:

> I have not actually had any input into his independent project; rather I have been an observer. . . . It is important to know that Hal has ADD and this affects his work habits. He loses many things, and he is not organized. [After school] we have **discussed** organization strategies and learning style. At this point I am uncertain as to the carry-over to his schoolwork and attitude.

Compare this to the attention Bryan's teacher gave to his learning problems as mentioned on earlier occasions. She not only suggested strategies but saw herself as the student's research assistant identifying hurdles and helping him to overcome them within the context of his investigation.

Believing in the Student's Ability

Successful teachers consistently believed in the student! When days went poorly for the student and they seemed to regress, the successful teachers consistently demonstrated their belief in the student and their patience in allowing the process to unfold. They shared in the excitement of what the students achieved and provided words of encouragement when the students were discouraged, angry, or upset with themselves. For instance, Jamison's teacher described in her log how she began their Type III time together as a free-writing exercise. After five minutes of writing, they read their pieces to each other. She explained that she wanted to use this strategy as a way of "providing Jamison with positive strokes" as well as a way of venting his feelings. We see her belief in the young man's abilities in the following lines she wrote during the free-writing, early in the Type III process:

> Here I am—5 minutes to write. Jamison is here with me. I like Jamison. He has that neat smile and he's interesting to talk to. I think he could teach me some things that I don't know about—like guns and woodcarving. Jamison and I will spend a lot of time together this year and I know it will be enjoyable for both of us.

Unlike this case, Barbara's teacher did not continue to believe that the student was capable of high performance. Her teacher on more than one occasion admitted to the research team, "She probably is not gifted but an overachiever. Perhaps we'll drop her from the program next year."

Relation of Findings to the Literature on Underachievement

This study examined the effect of using creative productivity (Type III enrichment) as a systematic intervention to reverse the pattern of underachievement in high ability students and to gain a more complete understanding of the complexity of the problem of underachievement. There were three objectives for the study. The first was to identify factors contributing to the problem as they revealed themselves during the process of the intervention. The second aim was to examine the effects of the intervention on individual students. The third was to offer strategies that would enhance the effectiveness of the intervention. The study sought to contribute information to the body of knowledge relating to the reversal of underachievement in high-ability students in order to provide a theoretical foundations for using Type III enrichment to reverse the underachievement pattern. The findings for each objective can be compared to those cited in the literature to offer theoretical confirmation or to provide new insight into previous research.

Factors Contributing to the Problem of Underachievement

The results of the study found that four main factors contributed to the underachievement of the students in our sample: emotional issues, social and behavioral concerns, inappropriate curriculum, and problems in learning such as poor learning strategies or learning disabilities. Multiple factors impinged upon the achievement for most of the students in this study. Most all of the contributors have been confirmed by the literature to some degree.

Emotional Issues

The most prevalent primary contributor for this sample of students was emotional issues such as perfectionism and a lack of self-worth originating from dysfunctional home lives. Research has shown that there is a strong relationship between perfectionism and underachievement for students (Adderholt-Elliott, 1989). Because perfectionists equate self-worth and achievement, they believe they lose part of themselves when they fail. In view of the fact that earthly perfection is unobtainable, perfectionists usually set themselves up for failure and negative feelings about themselves. Perfectionists only feel good when the product is very good. Adderholt-Elliott points out that is what explains why so many perfectionists procrastinate: instead of dealing with the possibility of an imperfect product, they put off completing the product until the very last moment. Others develop psychosomatic illnesses to avoid completing assignments.

Whitmore (1980) and Rimm (1986) both cite problems at home as a major contributor to a student's lack of self esteem. Family issues such as alcoholism, divorce, poverty, and abuse often result in a lack of attention to children. Some children underachieve to gain any attention from their parents (Delisle, 1982). Others give up or develop negative or helpless attitudes since nothing they do seems to matter (Seligman, 1975).

Social and Behavioral Factors

Researchers have also noted that social and behavioral factors play a role in exacerbating the underachievement problem similar to several cases in this study. Hébert (1993) found that students facing problematic family issues at home often turned to the influence of a social peer group that appeared to negatively influence attitudes toward academic achievement. With an inability to deal with unstructured time, the underachievers in Hébert's study turned to a negative environment and became involved in serious disciplinary situations. They developed well-established reputations as behavior problems with their underachievement situation becoming more severe.

Inappropriate Curriculum

Prevalent in the literature are studies that show how underachievers are poorly served by the schools. This assertion usually refers to gifted underachievers who are thought to be bored or unstimulated by the traditional curriculum (Mallis, 1983; Pirozzi, 1982; Sahler, 1983). Many students are given a curriculum beneath their instructional level and made to complete meaningless tasks with little regard to the superior abilities of these students (Reis et al., 1993). In addition, instructional strategies and assignments fail to consider individual learning styles, gifts or talents (Gardner, 1983; Myers, 1979; Whitmore, 1980). These conditions inhibit and discourage some high ability learners resulting in a lack of willingness to achieve and a loss in their enthusiasm for learning (Kaufman, 1991).

Poor Learning Strategies or Learning Disabilities

Many bright students fail to achieve due to an undiagnosed learning disability. Often these youngsters had been identified as gifted at a young age due to advanced verbal abilities and high scores on intelligence tests. However, as they grow older the discrepancies widen between expected and actual performance because of poor spelling, handwriting, and organization skills (Baum, Owen, & Dixon, 1991; Maker, 1977; Silverman, 1989; Whitmore, 1980). Often called lazy (Reis & Neu, 1994; Tannenbaum & Baldwin, 1983; Whitmore, 1980) these students may slip through the cracks for services because they do not achieve below grade level (Baum, 1994). The student's frustration may turn to depression, aggression, and discouragement (Mendaglio, 1993; Olenchak, 1994).

Similar characteristics describe students who may not have a learning disability, but unlike high ability competent learners, they lack efficient learning strategies or knowledge about how to use them for particular purposes. Thus, these students are unable to seize control of their learning (Bandura, 1989; Zimmerman, 1989).

In summary, the factors contributing to the underachievement of the students in this study have been confirmed by the literature. While each case displayed a unique profile of contributors, the students reacted by losing interest in school and by choosing not to achieve.

Effect of the Type III Intervention

The findings of this study revealed that engaging underachieving students with high academic potential in Type III enrichment resulted in numerous gains even though different factors contributed to the underachievement pattern for individual students. According to the literature, as researchers began to understand that multiple factors contributed to the pattern of underachievement (Compton, 1982; Delisle, 1982; Emerick, 1992; Rimm, 1986; Whitmore 1980), it became evident that attempts at intervention needed to be holistic and long term. Interventions based on modification of the educational experience sought to make learning more meaningful in a setting that was nurturing and student-centered. Relatively few studies have been reported that have attempted a holistic educational approach (Tannenbaum, 1983). Most involve special class placement with other gifted or gifted underachieving students (Karnes et al., 1963; Raph, Goldberg, & Passow, 1966; Whitmore, 1980).

Karnes et al. (1963) placed two groups of underachieving elementary children with IQ scores of at least 120 were placed in one of two settings: (1) a homogeneous class of academically achieving gifted students or (2) a heterogeneous class of mixed abilities. The students placed in the homogenous setting with other bright students outgained the controls in achievement, divergent thinking, and feeling accepted and valued by parents. The students in the gifted class had a student centered curriculum modified to emphasize their high levels of ability.

Whitmore (1980) began the Cupertino Project for primary and elementary gifted students who were underachieving. These students were placed in a self-contained class designed to accentuate student cognitive, emotional, and motivational needs. The program was built on the belief that these students need strategies designed for gifted students even more critically than do high achievers. Some components were student decision-making opportunities, flexible school day, and advanced curriculum. Remediation for basic skills was offered as needed. The primary program met with a 100% success rate and the intermediate boasted a 50% success rate leading Whitmore to advocate for early intervention. Based on her work with gifted underachievers, Whitmore offers the following guidelines for improving academic performance in high ability students. The program should provide:

1. Curriculum which is both challenging and meaningful;
2. Instruction which minimizes memorization and drill, and which nurtures self-discipline and self-direction;
3. A group of similar ability students who can serve as intellectual peers;
4. Special services designed to assist with handicapping conditions;
5. Gifted programming and/or group counseling opportunities;
6. Teachers who are understanding, positive, and who offer guidance.

(Whitmore, 1987)

In a third study, Raph, Goldberg, and Passow (1966) designed an intervention for underachieving gifted students at the high school level. In this study two matched groups of students labeled "gifted underachievers" were placed into two conditions. The experimental group was organized into a special class that combined homeroom and social studies for two periods each day with the same teacher. The other students did not stay together as a group but were assigned to other social studies classes. The teacher of the experimental group explained to the students that they possessed high academic ability, but they needed help in improving their school performance. He expressed his genuine interest in them as individuals and made himself available to discuss any personal or academic problems they wish to raise. After one semester the groups were compared. Although the experimental group improved, the control group made significantly higher gains. In reviewing the effects of academic interventions, Tannenbaum (1983) concluded that the interventions seem most effective with younger students. He postulated that by the time students reach adolescence it may be more difficult to change school behaviors.

In our study we found no differences in treatment effects between elementary and secondary students. While the Type III intervention has features similar to the interventions described above in terms of providing a caring and challenging learning environment, it offers additional components. Type III enrichment is designed around the interests of the individual student where skills are taught within the context of a problem-based curriculum. Students are creating new knowledge and sharing their findings with concerned audiences. Learning is goal directed and not viewed as a school assignment to be graded. Current theorists on motivation argue that learning which is personally relevant and challenging motivates students to employ high-effort strategies and persevere even when the task becomes laborious (Clinkenbeard, 1994; Corno & Rohrkemper, 1985; Lepper & Hodell, 1989; Nicholls, 1989). It may be that the qualities that make Type III enrichment unique are also those qualities that make this intervention successful with both elementary and secondary students.

Effective Teacher Strategies

The results of the study identified six teacher behaviors that seemed to promote student success: taking time to get to know the student, focusing on positive traits of the student, understanding their role as facilitator, understanding the Type III process, applying the role of teacher as researcher, and conveying a belief in the students' abilities. Only a few studies have examined the role of the teacher in helping students to reverse their underachievement pattern; thus our knowledge of effective teacher strategies is significantly limited. In a study of 140 gifted achievers and 144 gifted underachievers, for instance, O'Shea (1970) found that the successful teachers made education a rewarding experience and clarified the relationship between school assignments and adult lives. Mukhopadyay and Chugh (1979) trained teachers to individualize instruction for and give attention to the underachieving child. The teachers were trained to increase positive feedback and to decrease negative responses and comments to students. The results revealed an increase in underachievers' participation in class activities and discussion. Underachievers of all ability levels improved in achievement.

In a unique study, Emerick (1988) sought information from high-potential students who had been underachievers for several years but had reversed their pattern to one of achievement with no obvious intervention. Her purpose was to analyze the students' perceptions of factors contributing to their reversal. Although she found six factors, the role of the teacher emerged as consistently influential. The students perceived the teacher as being very influential if he or she were motivating, if he or she were seen as concerned for the individual and active in demonstrating kindness and caring; if the teacher communicated in a non-authoritarian manner; was not mechanical in teaching; and maintained high, but realistic expectations for the student. In short, the few studies reported give credence to the importance teachers play in any intervention strategy. While the behaviors identified in this study relate to those cited in the literature, they also are unique to the Type III intervention.

Conclusion and Discussion: The Prism Metaphor for Reversing Underachievement

The results of this study provide insight into the multiple causes of underachievement; the dynamic and idiosyncratic effects of the Type III intervention process on students; and specific teacher behaviors that have a positive impact on student motivation, self-efficacy, and achievement.

These results also suggest a new metaphor for addressing the complex dynamics of revering underachievement, the prism metaphor. Past efforts to reverse the underachievement problem used the wrong type of lens to focus the problem. Typically telescopic in nature, this approach targeted traditional steps to achievement—study hard, do your homework, get good grades, and please your teachers.

Rather than a telescopic approach, this model uses a prism to redirect the focus. Just as a prism takes in nondescript light and transforms it into colors, so does the Type III experience unleash the hidden potential of underachieving students with high academic ability. The Type III experience accomplishes this by capitalizing on the potential for positive interaction among student abilities, interests, learning styles, and supportive student-teacher relationships. The metaphor, pictured in Figure 3, illustrates the transformation from underachievement to achievement.

As seen in the figure, underachievement is based on the interrelationship of a variety of contributing factors. These factors, based on existing literature and confirmed by this study are: emotional issues, social and behavioral problems, inappropriate curriculum, and learning deficits. What is interesting is that the precipitating factors for some of the underachieving students in this study were not apparent until the student was well into the intervention process and only came to light as a result of the close student/teacher interaction. These factors result in individual student needs which must be satisfied before the pattern of underachievement can be reversed.

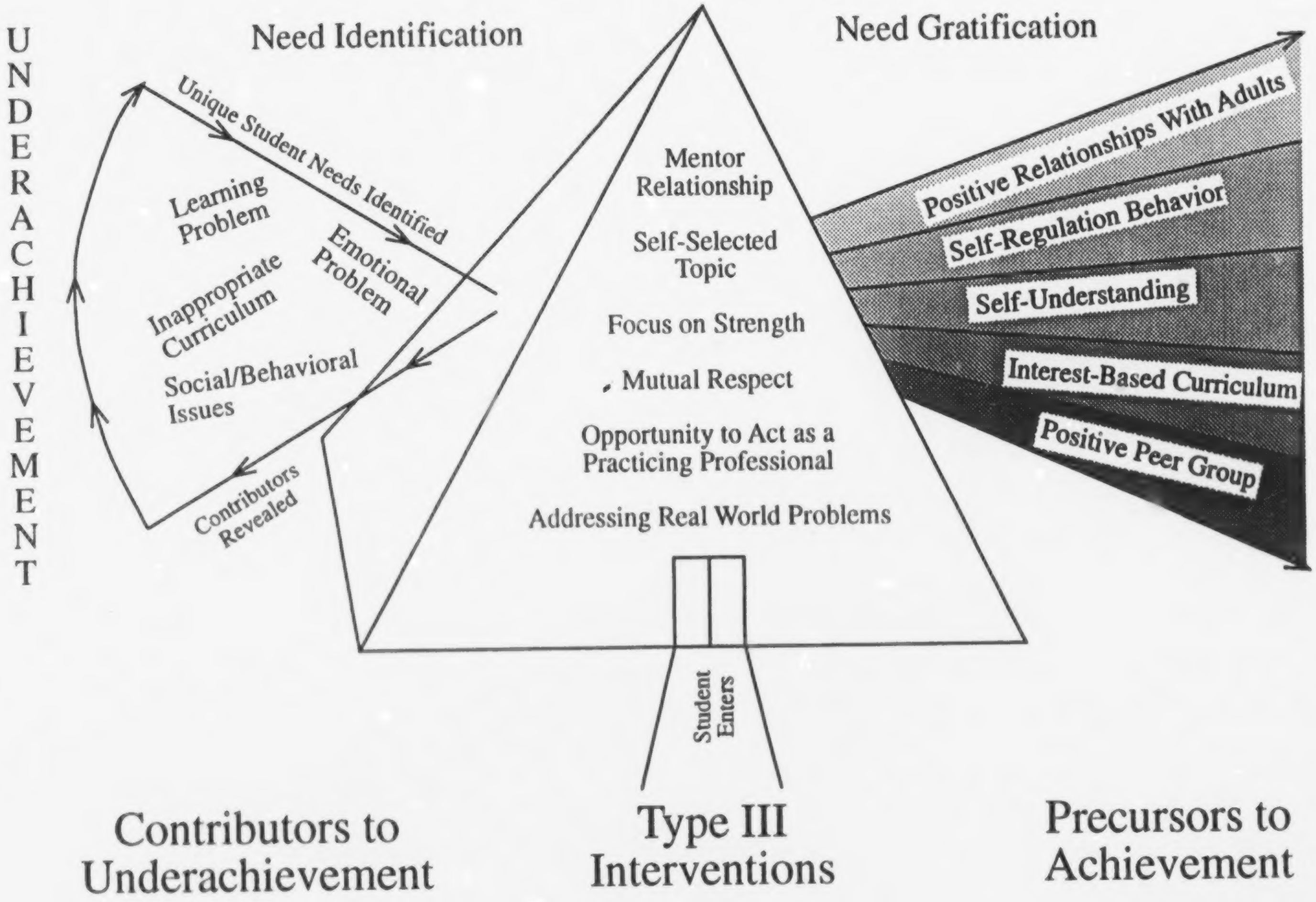
UNDERACHIEVEMENT
Need Identification
Unique Student Needs Identified
Learning Problem
Emotional Problem
Inappropriate Curriculum
Social/Behavioral Issues
Contributors Revealed
Mentor Relationship
Self-Selected Topic
Focus on Strength
Mutual Respect
Opportunity to Act as a Practicing Professional
Addressing Real World Problems
Student Enters
Need Gratification
Positive Relationships With Adults
Self-Regulation Behavior
Self-Understanding
Interest-Based Curriculum
Positive Peer Group
ACHIEVEMENT
Contributors to Underachievement
Type III Interventions
Precursors to Achievement

Figure 3. The prism metaphor for reversing underachievement.

In this metaphor, the majority of the time, energy and resources of teachers are allocated to enabling the underachieving student to experience success and overcome personal obstacles to achievement. In effect, the Type III process satisfies individual student needs resulting in one or more of the following: positive relationships with adults, acquisition of self-regulation strategies, an understanding of personal issues of underachievement, an interest-based curriculum, and the influence of a positive peer group. These factors, then, precede and are critical to improved student achievement.

While it would be inappropriate to assume a cause and effect relationship, desirable behaviors not ordinarily displayed by these students emerged as a direct result of participation in the Type III process. Based on these data, the Type III intervention appears to offer a practical educational strategy that meets the various needs of underachieving students with high academic potential across individual etiologies.

The prism metaphor was selected to help explain the transformation that takes place when underachievers turn-around because of the complex blending of effects that occur within the context of a Type III experience. Whereas real images are formed when rays of light are reflected in a mirror, something quite different happens when a ray of light is passed through a prism. Not only does it change direction, which was the goal of reversing the underachievement of students in this study, but it also takes on qualitative differences that result in a spectrum of color that is critically different from the light energy that originally entered this special environment. Scientists understand and can explain what happens within a prism only to a certain extent. There is also a "mysterious phenomenon" that happens within the special prism environment that is readily observable (the dispersion of white light into a spectrum of color), and a similar phenomenon was observed as the students pursued Type III experiences. We can only speculate about the combination of ingredients that caused a turn-around within the Type III environment, but we believe that the unique and somewhat mysterious effects that take place within the prism environment are a good metaphor for the changes observed in participating students. Because of the uniqueness of each student, and the equally unique interaction between teacher and student, a certain part of the explanation for these reversals may remain somewhat of a mystery. Other than the overall and admittedly flexible circumstances that surround each individual Type III experience, a prescription or formula cannot be written that is appropriate for all underachieving students. However, we believe that the prism metaphor provides enough information to create the early stages of grounded theory about the dynamics of underachievement and specific procedures and guidelines for reversing the patterns of underachievement in students with high abilities and potentials.

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Appendix A

Sample Management Plan

SAMPLE MANAGEMENT PLAN

NAME(S) ______
SCHOOL ______ GRADE 8

Beginning Date 10-6-89
Estimated Ending Date 2-89

What idea do you plan to investigate? Why?
Jury Trials—because we want to write a better one for use by 8th grade

What form(s) will the final product take?
Role play for class use

How will you communicate the results of your investigation to an appropriate audience?
Devise role play situations and rules that simulate a jury trial

List some possible intended audiences: (Name and addresses of contact persons in organized groups on local, state or national level)
8th grade classes
Social Studies publisher

Getting Started: What types of information or data will be needed to begin your project?
Packet of information on court room procedures from civic teacher
Court room procedures

Where can you find that information?
Media center, Attorneys, Court observations

How-to-do-it books/written materials: Use bibliography format.

Adapted from Renzulli, J. S., & Reis, S. M. (1985). The Schoolwide Enrichment Model: A comprehensive plan for educational excellence (p. 439). Mansfield Center, CT: Creative Learning Press.

OVER

Check the boxes below of all the ways you intend to get new information to complete your project and list the specific sources:

☐ Viewing TV, videos, films, etc. (which?)

☑ Interviewing people (who?) Jo Marie Alexander/Attorney=Mrs. Rosenbaum

☑ Observing/collecting data (what?) Court room–Hennepin CT. Court Justices interviews

☐ Surveying (who?)

☐ Taking a class or working with a mentor (specify)

☐ Attending a performance (specify)

☐ Other (specify)

List all materials and equipment needed:

Computer

TASKS: List in order	To be completed by:
1. Get info. talk with people at how it works.	Oct.
2. Examine other role play simulations	Oct.
3. Decide how we want to design the format for our role play.	Nov.
4. Decide on plot and characters for story-line.	Dec.
5. Skeleton of the drama	Dec.
6. Divide responsibilities for roles and directions	Jan.-Feb.
7. Write	Jan.-Feb.
8. Conference w/teachers and attorney	Apr.
9. Edit/copy/put together	May
10. Evaluate performance	May
11. Revise and submit for publication	May

I realize that it is my responsibility to have the appropriate resource materials to work with in class everyday.

Student Signature

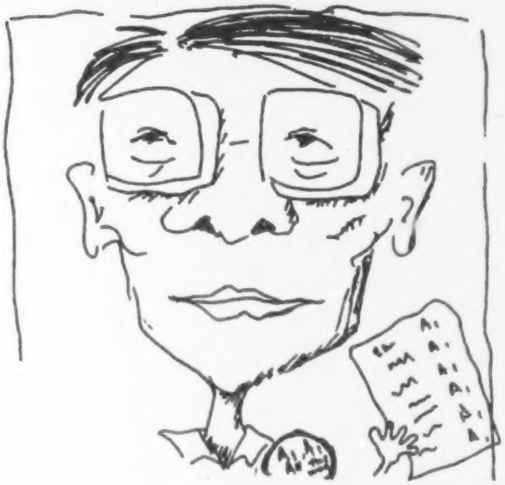
Resource Teacher

Appendix B

Sample Page From Student Product

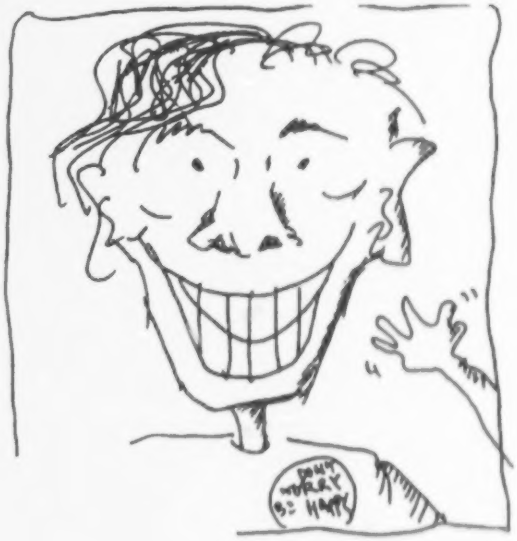
Sample Page From Student Product

Knowing the great difficulty S'poreans experience in making decisions (thus leading to the great number of unmarried aging graduates). We know you are terribly unsure of which category of the deceased. . .Ooops! I mean. . . diseased you belong to. Thus we have kindly produced two excellent drawings of what each looks like:



Superachiever

If you intelligently choose to be a superachiever, please turn to page 6.



Underachiever

If you intelligently choose to be an underachiever, please turn to page 10.

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